

Inside: Stephanie Rose on Palms

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Volume 4
Number 2
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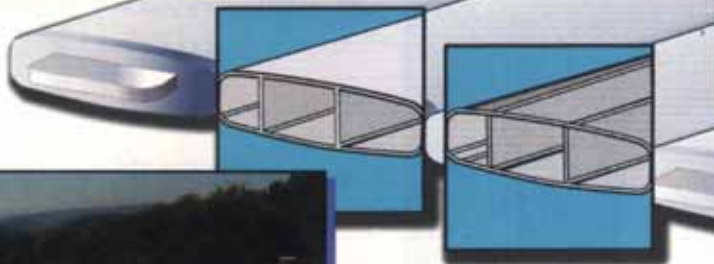
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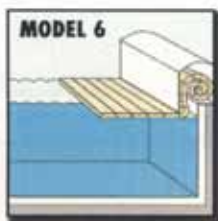
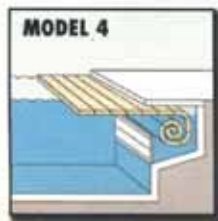
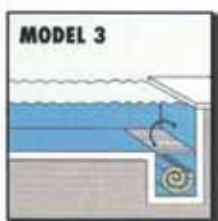
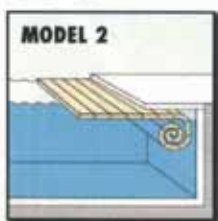
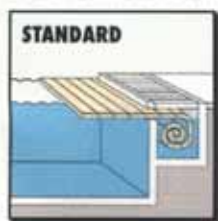


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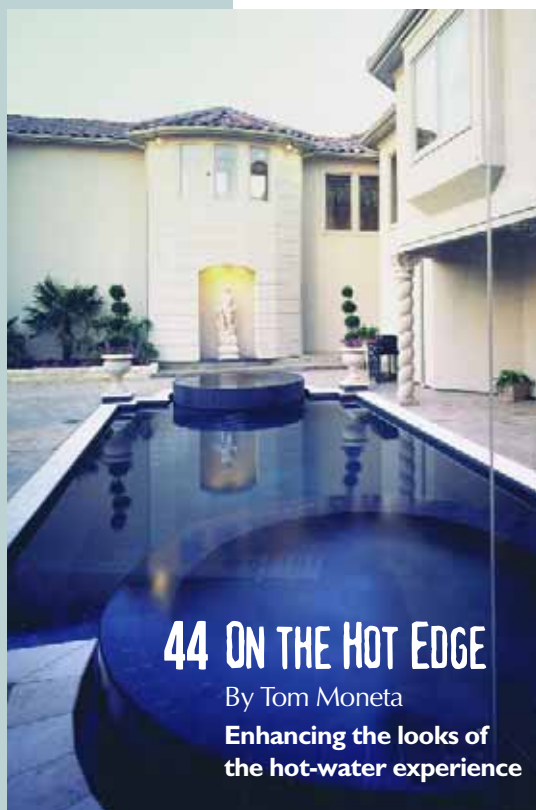
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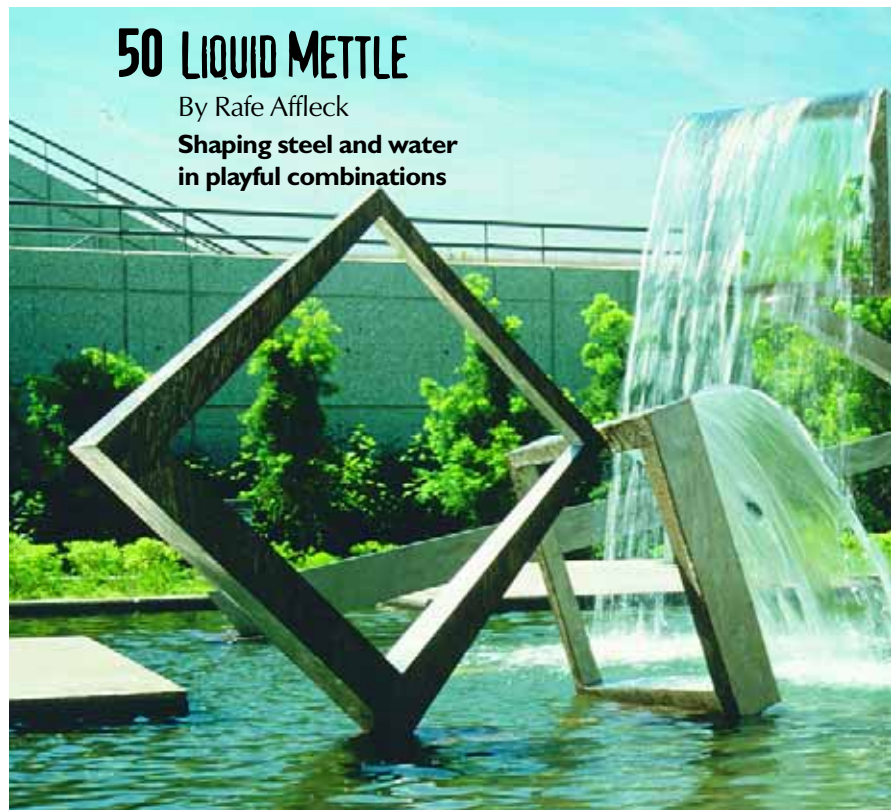
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On the cover:

**Photo courtesy Rafe Affleck, North Hollywood, Calif.,
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Fountains of Use

I had the pleasure early in December of attending the first-ever Genesis 3 Fountain School in Toronto. As we've often discussed in these pages, Genesis 3's programs are loaded with useful information, feature great food and entertainment and, most important, embody and promote a vision of watershaping that is nothing short of transforming for those who attend.

But this isn't about Genesis 3 per se. Rather, it's about our hosts for the event, Toronto's own Crystal Fountains.

For a long time now, I've been a huge fan of Crystal Fountains and its president, Paul L'Heureux, with whom I've had the pleasure of working on several articles for the pages of *WaterShapes*. In addition to being a truly gracious and delightful guy, Paul is a tremendously savvy businessperson.

Flat out, I like his style. Where many others in the fountain manufacturing/design/installation community make a dogged point of aggressively withholding information from watershapers in the name of protecting their markets and clientele, Paul and the staff at Crystal Fountains have done their utmost to open up and share a vast store of knowledge and experience with designers and builders who are willing to listen and learn.

By demystifying fountain technology in this way, Crystal Fountains is empowering and encouraging watershapers to embrace a brave, new world of water effects and include them in projects in diverse spaces for a huge variety of clients. From a business standpoint, I can't imagine a more growth-oriented strategy. From my perspective as one cheering on the continued success of the watershaping trades top to bottom, this strategy is just the sort of thing that spurs creativity and shapes the future.

The plain fact is that consumers generally want what they've seen. When the elegant effects made and marketed by companies such as Crystal Fountains find their way into more residential settings, there is no question that a whole new class of consumers will want and ultimately demand these effects for their own backyards – and their front and side yards and office spaces, too, for that matter.

While in Toronto, I was delighted to watch this sophisticated company – one famous for high-end installations around the globe – pull back the veil and show those in attendance the rich array of watershaping possibilities available through use of basic fountain technology. It goes without saying that this information exists in other companies and that there are those in these companies who have willingly shared some of what they know, but to my knowledge, none have gone so far or been quite so open.

To my mind, what Paul and his colleagues at Crystal Fountains did with this school – and will continue to do with their open-book approach – creates the best sort of win/win situation: Crystal Fountains wins because watershapers will see them as *the* resource for product and technical information; watershapers win because they have a wonderful resource and an expanded bag of tricks they can use to make their clients happy; and most important of all, consumers win because they will have a greater potential to experience the joy of these watershapes in their homes.

To all of this I say, "Bravo, Crystal Fountains!" – and will say the same for one and all who follow their lead.



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Kathy Marosz is owner and president of Enviroscapes, a landscape design and construction firm in San Diego, Calif. Marosz founded her company, which focuses on hard-scape design, planting plans and creative installations of swimming pools and other watershapes, more than 12 years ago after studying landscape architecture at Cal Poly San Luis Obispo. Before joining the watershaping and landscaping trades, she enjoyed a successful career as a singer and musician – experience she says helped develop her ability to connect with and inspire clients.

E. J. Biernesser is a freelance writer based in Verona, Virginia, and the brother of **Pete Biernesser**, co-owner with **Mike Raible** of Glacier Inc., a supplier of architectural and decorative stone that's based in Glenshaw, Pa. The company was founded in 1995 and now operates two quarries in Pennsylvania and one in Maryland, marketing its stone to architects, builders and landscape designers throughout the United States. In addition, the company tackles design and construction work – most of it featuring stonework on a very large scale.



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Tom Moneta is president of Leisure Living Pools, a high-end custom swimming pool design and construction firm based in Frisco, Texas. He founded the company with his wife Joyce in 1980, with the goal of emphasizing overall backyard designs that include decks, arbors and fences in addition to watershapes. The company has been recognized both nationally and locally with a variety of design awards: In 1998, the National Spa & Pool Institute gave the company its Technical/Engineering Achievement award. Moneta has participated in the Genesis 3 program, has served as member of the national board for the National

Spa & Pool Institute and is past chairman of NSPI's Builders Council.

Rafe Affleck is a North Hollywood, Calif.-based sculptor who creates modernistic and geometric stainless steel forms for fountains and watershapes. Most of his commissions come from commercial developers, but he also works for a range of very-high-end residential clients. Affleck's career began more than 20 years ago, following a stint as a graphic designer for a variety of firms in the Southern California area. His portfolio includes hundreds of commissions for a worldwide register of clients.



Top: Kasco's 2 HP "Linden" with L-375 lighting option and the 2 HP "Aspen" displays. Bottom: The Kasco 3/4 HP, F3400/VF Decorative Aerator. Other display patterns are also available.

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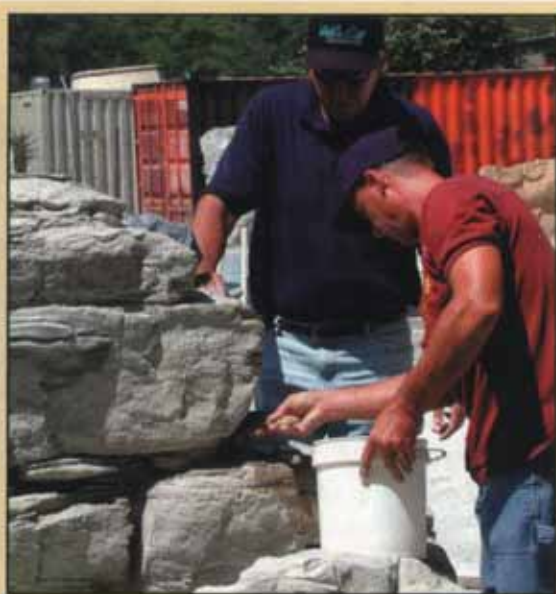


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LETTERS

Hydraulic Factors in Energy Efficiency

I read with great interest the article by Mark Urban ("Filling the Energy Gap") in your September 2001 issue (page 34). I agree with Mr. Urban's analysis of the thermal dynamics of a swimming pool, but I disagree with his approach to installing a reverse-flow heating system.

In fact, installing this system on an actual pool as Mr. Urban illustrates in his article would actually violate a number of building codes, plumbing codes and industry safety standards. It would also create hydraulic problems and pose a threat to the pool equipment.

I agree that heating a pool from the bottom up is the most efficient way. The standard for even our most basic pool includes a minimum of two deep-end floor returns. The return line manifold passes under the floor, into which we plumb adjustable commercial floor returns with circular perimeter slots. Mind you, we *do not* use standard eyeball fittings, wherein a finger can become entrapped in the deep end's floor.

If one followed Mr. Urban's suggestion to use the main drain and return lines as a reversible system, one could be setting oneself up for a series of problems, potential injuries or a lawsuit.

- First, the return lines on most pools are usually smaller than the suction lines. Most plumbers actually reduce the return-line size as the distance from the pad increases, instead of looping the return lines around the pool. In the reverse-flow mode, the pump will attempt to draw water equally from the return and skimmer lines, but cannot do so because of the restriction of the smaller return lines. The result will be increased line velocities, pump cavitation, erosion of the plumbing (if copper) and possible vortexing at the return lines. In addition, the suction at the return lines will rise to dangerous levels (read that as entrapment).

- Second, when suction is applied to a wall fitting, there is the potential of vortexing up to the surface of the pool, thereby drawing air into the system. In addition, the resultant line velocities at the eyeball fittings would be at dangerous levels. Eyeball fittings *are not* suction fittings and should not under any circumstances be used as such. Some manufacturers have been successfully sued because a builder has used their products in this sort of incorrect manner.

- Third, by removing the secondary suction point (main drain) from the skimmer in reverse flow mode, you risk severe damage to the pump. If the basket becomes clogged with debris, the float valve will shut the skimmer down. The resultant closure will force the pump to draw 100% of its water from the return lines, thus *guaranteeing* vortexing.

If by happenstance the skimmer weir should become stuck (out of alignment, blocked by a toy or debris), the float valve would endlessly pop up and down as the pump lost and gained prime. Because the secondary suction point

well below the surface has been removed from the skimmer, this cycle will continue until the pump shuts off. There is no longer a main drain line from which the pump can draw water in a low-flow situation.

To use the techniques presented, one would have to take a number of additional steps during the remodeling of a pool:

q After disconnecting the main-drain line from the skimmer, connect an equalizer line through the front wall of the pool. This provides an alternate suction point in the event of a low-flow situation or inoperative skimmer (clogged basket, damaged weir). Of course, the new equalizer line must be finished with an anti-hair-entrapment suction fitting. These covers, which feature hundreds of pin-size holes, are used extensively in the commercial-pool and portable-spa markets.

q The primary main-drain line should be split into two equidistant dual main drains set at least three feet apart. Using the same pipe size for the branch lines as the main line will help reduce the line velocities at the drains even more. Also, the return line eyeballs should be replaced with anti-hair-entrapment suction fittings.

q The hydraulics of the system should be calculated in both the regular mode and the reverse mode by using pressure and vacuum gauges. If it is found that the smaller return lines are interfering with the hydraulic performance of the system, then remedial action will be necessary (such as downsizing the impeller, demolishing the decks and upsizing the return lines, for instance).

As a construction firm that carefully engineers the fluid dynamics of every system we install, we are aware that monkeying with the original design can spell catastrophe. If remedial action has been taken by downsizing the impeller, for example, the resultant flow rates in the regular mode might not be sufficient to provide adequate turnover rates or the flow rates necessary to operate peripheral equipment (such as heaters, auto-chlorinators or solar panels) – all of which must be considered.

We and other builders frequently use solar booster pumps in solar installations, because we use the smallest filtration pump suited to a system's dynamics. If our booster now flows more gpm than our primary pump, we will develop a vacuum behind

the primary pump – that is, cavitation. The resultant vacuum poses the potential for an implosion of the filter tank, grids or cartridges. In addition, there might not be enough of a flow rate to backwash a sand or diatomaceous-earth filter adequately.

In such an installation, the maintenance of the water level would be critical to preventing the return lines from vortexing,

if indeed it can be prevented at all, given their elevation. Therefore, installation of an auto-fill device would also be wise.

Paul Benedetti

*Aquatic Technology
Morgan Hill, Calif.*

Editor's Note: Mark Urban's response will be published in an upcoming issue.

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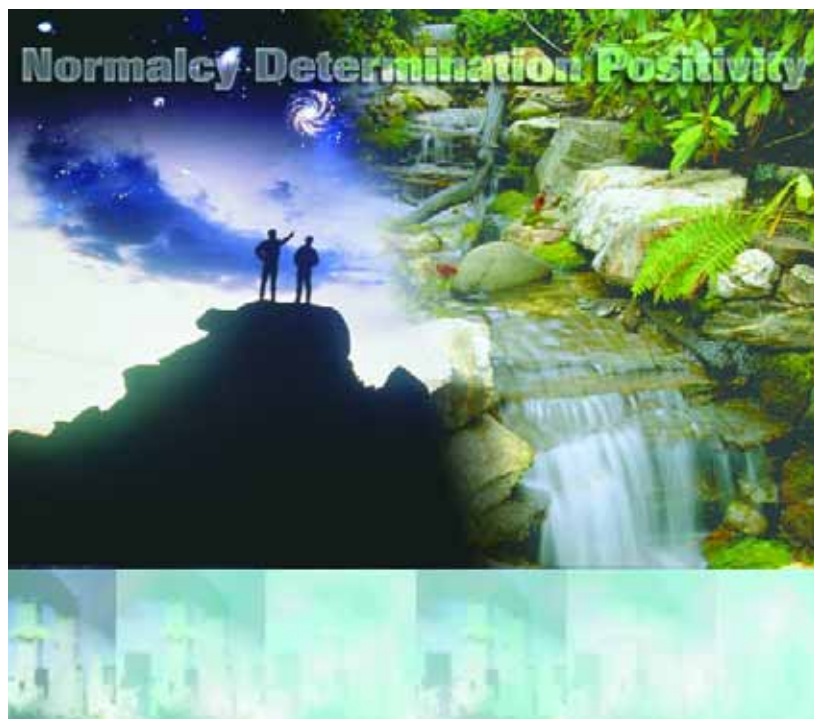


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In considering the future of watershaping, it becomes clear that our products have much to offer by way of comfort, tranquility, delight and, indeed, healing for wounded hearts and minds.

ing more and more positive about life in general and business in particular. In fact, I decided to write on this topic, as difficult as it is, because lately I've been asking myself a simple question: What if, in our own ways as watershapers, we could actually help the world heal?

I think it's an important and empowering question, because the answer is something that can give us hope and comfort in the midst of uncertainty.

In considering the future of watershaping, it becomes clear that our products have much to offer by way of comfort, tranquility, delight and, indeed, healing for wounded hearts and minds. In this context, the positive power of water is something we should fully embrace – and communicate every chance we get.

For years, we've been talking about how good water is for us physically as well as psychologically, how it beautifies and enlivens our surroundings, how it can be used to encompass the beauty of art, architecture and nature. That's all truly great stuff, and I see nothing at all wrong with understanding those benefits and recognizing how the qualities of water fit into the needs of our current social and economic environment.

In other words, I believe that we watershapers can have a tremendously positive influence on the world, simply by continuing to do what we do best.

I'll be the first to acknowledge that this is a tricky point to make, given the tone of our times. No one wants to exploit tragedy to turn a buck, and we certainly don't want to appear so crass as to consider what has happened as anything other than horrific. At the same time, however, it doesn't mean we must dwell on negativity and pessimism.

Quite the opposite: In fact, I believe that we have an *obligation* to participate in our economy in a proud and positive way. Communicating the curative benefits of our products is noth-

The Best Medicine

At nearly five months and counting, it's clear that many of us are still trying to sort out, understand and learn to live with the events of September 11, 2001 – and I suspect that, on some levels, we will be doing so for months or even years to come.

Over and over again, we've been told how our lives are now different. Although it'll still take us a while to find out what "different" really means, we know already that we've lost a certain amount of innocence. We've also lost a certain naiveté about the way things are in the wide world and are now reevaluating many things, from big important issues such as airport security to more modest concerns such as the courtesy and consideration we show each other in our daily lives.

As individuals and as a nation, we have been challenged by these events, and I will never stop being amazed that there are people in this world who would want to waste their own lives trying to destroy ours.

At the same time, we're being told that we all need to get on with our lives: Although I'm sure I'm not alone in being a bit tired of hearing that message, the underlying point is still valid: The fact is, the future awaits us and we each must decide how we will face what tomorrow brings!

Good Nature

Thinking about such huge issues tends to make people gloomy – and understandably so, I suppose. But as more time passes, I actually find myself feel-

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ing to be ashamed about: It's not an idea that's a result of these troubled times but is something that has been part of the appeal of watershapes for generations.

This isn't cynicism. Instead, it's profoundly hopeful.

Safe and Sound

In talking to prospective customers over the past few months, it's become clear to

me that they really do *need* water in their lives, perhaps more than ever before. These clients need a place to swim and relax. More than ever in my experience, they value the notion of creating an island of enjoyment and tranquility as part of their homes.

It all makes sense: In uncertain times, people crave a feeling of security and safety. The most natural place to find

that haven is in conjunction with their homes. And the fact that I'm in a position to craft that haven for them is a source of great pride for me.

As watershapers, we create places to exercise, play, relax and reflect. I can't see it as being opportunistic or exploitive to consider the possibility that recent events will drive many people to consolidate and dig in on the home front. Nor do I see a problem in expressing the thought that people who seek comfort in the privacy of their own homes should consider how much finer those spaces can be when water is included.

It's a compelling story, and I'm not alone in urging watershapers to bring it to the forefront. My concern, however, is that we must unite in approaching these issues in a positive, supportive way.

I'm certainly not suggesting that we sell against the fear of travel or resort to urging people to spend money on something they don't want or need just because of some perceived threat. By contrast, I believe that through a positive attitude and by telling the truth about the wonderful, restorative qualities of our products, we are uniquely positioned to give people looking for normalcy and comfort *exactly* what they need.

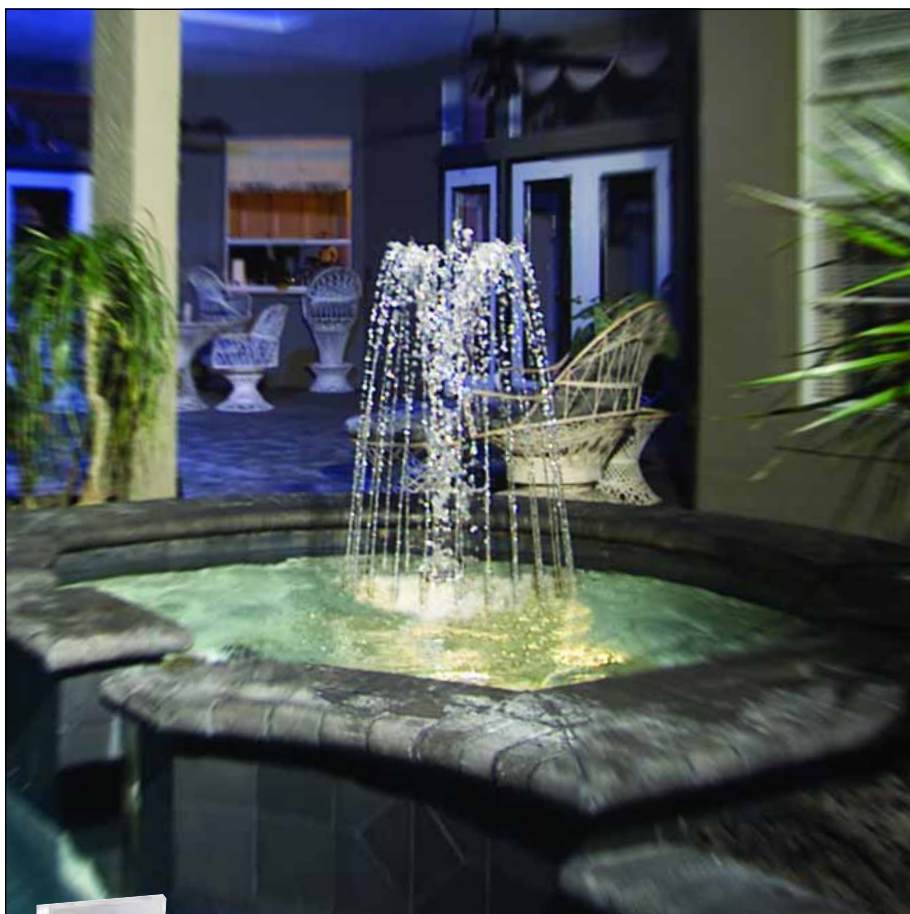
So now, more than ever, we should remember that watershapes are all about good moods, fun, enjoyment and togetherness. They embrace our ability to reward ourselves for hard work and give us a chance to harvest and enjoy the hard-won fruits of our labors.

At a time when our very way of life has been threatened, understanding and appreciating those values is crucial – and a key to establishing once again a sense of normalcy and calm.

Undercurrents

For all the uncertainty, an interesting thing is happening in our country: Spending is "in vogue."

The President is telling us to spend money, there are even some companies out there giving their employees bonuses with instructions to spend it promptly. I hear it in my local market and beyond: Although travel and tourism are in dire straits, consumer confidence and optimism are still riding high. It's as



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though there's an underlying conviction that the current slowdown is truly temporary and that there's little sense in worrying about an economy that's already showing signs of bouncing back.

I take all of this as good reason to be optimistic. After all, we've seen what can happen when this massive and dynamic economy gets hot – and we all know that economics are cyclical. Certainly good times will come again, and what's equally encouraging is that the length of the slowdown and its severity is mostly a product of our collective mental outlook.

That's right: As amazing an engine as our economy may be, the one thing that fuels it more than anything else is *mood*.

And believe me, I get frustrated when I hear economic doomsayers spinning their gloomy yarns, because their negativity can become a self-fulfilling prophecy. As consumers, we look to each other to see how we're doing. As an industry that by its very nature creates emblems of prosperity, our outlook and our own prosperity is a strong sign of good things to come.

Yes, we are capitalists, which means we involve ourselves in opportunities that come our way. We may not have chosen certain aspects of our current circumstances, but it's our duty as members of this vast and diverse society to make what we can of the times we live in, for the sake of today and tomorrow. And we should get down to it with a smile!

This perspective should come as no surprise to those of you who've been reading this column through the past three years. I've used this space over and over to make a case for the power of a positive mindset, and I believe we have so much more control over our own destinies than we sometimes think.

As we swing into 2002, smiling on the telephone, polishing our skills and taking pride in the work we do *all* become tremendously important.

A Bigger Picture

What we have going in our little watershaping corner of the world is only a small part of a much bigger picture, but what I've been discussing here has huge implications and falls right in line with



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thoughts expressed by great philosophers through the ages.

They tell us that no matter what has happened in the past, we must take the next step. I believe that this is what our leaders mean when they tell us to return to normal and to go about the business of our lives. Yes, we should learn from history, and there is no question that the events of the past year will be with us forever – but that perspective should serve only to fuel our determination to move forward.

In that context, becoming the best watershapers we can possibly be and taking more pride in our work than ever before is how we join the battle. It's the role we've been born to play, and now's our chance to gain recognition for what we've *always* done so capably.

Sure, there are those who will dismiss pools, fountains, spas, ponds and streams as entirely frivolous – and in some ways I suppose they are. But when consumers call on me to beautify their homes and increase the quality of their outdoor environments, I am convinced deep down that we truly have something wonderful to offer: Through a positive, winning attitude, I give them just the beautifully frivolous fountain, or stream, or pond or pool they really want.

In times like these, there's great value, virtue and honor to be found even in our frivolities. Today's filmmakers should create their best movies, chefs should make their finest recipes, opera singers should belt out arias as never before – and watershapers should embrace and celebrate their works with a maximum amount of pride and vigor.

That's what winners do: We carry on when others would quit and look up when others are looking down. **WS**

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. He can be reached at bvanbower@aol.com.

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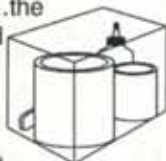
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Palms Up

When you think of palms, it's easy to conjure visions of Hawaii or some other tropical paradise. These graceful plants evoke a sense of serenity and thoughts of calm tropical breezes – and maybe even memories of a cool mai tai in your hand.

Unfortunately for lots of us, palms thrive only in warmer climates. In the United States, for example, they generally do not grow north of the 33rd parallel, which stretches roughly from Northern California on the West Coast to South Carolina on the East Coast.

This geographic factor is the main reason I haven't discussed palms before in this column. After three years, however, I figure I'm entitled to slip in at least one discussion that will leave some readers out in the cold (so to speak) – especially when the topic is as significant as this one.

It's also true that geography isn't an absolute limit for palm lovers. As I'll discuss later, there's much to be said for growing palms indoors!

Limitless Variety

As is true of any class of plants, different species of palms grow in a range of climates and temperature zones suited to their specific needs

The great practical advantage of palms is that they can be placed almost anywhere. Most varieties do not require a lot of room for their roots and, over time, they won't disturb hardscape the way a ficus or certain other plants with invasive roots will.

– and there are lots of species to consider.

Palms come in an array of shapes and sizes. Lilliput palms are only about six inches tall when fully mature, while other varieties reach close to 200 feet tall. Some have one trunk, while others boast many. Some flower; some don't.

It's also important to note that palms are not strictly ornamental. In many regions, their fronds and trunks are used as principal construction materials and in crafting furniture, and they produce important cash crops around the world – oils, waxes and fruits that sustain the economies of certain regions. Who among us hasn't seen or tasted coconut milk or meat?

As you travel in warm climates, you may spot some very interesting palm varieties, but there are specific types that are quite common in certain areas. As with any other plants, I'd suggest checking with your local nursery before planning a landscape around a specific variety to see if it grows well in your area – or if it can be ordered and will in fact thrive where you plan to put it.

Palms are versatile in design terms. They fit particularly well in tropical or contemporary landscapes, but they are perfect specimens in almost any design style.

Their great practical advantage is that they can be placed almost anywhere. Most varieties do not require a lot of room for their roots and, over time, they won't disturb hardscape the way a ficus or certain other plants with invasive roots will. So unlike other trees, it's usually easy to plant right up against a mature palm's base, making it easier to plan a landscape around existing palms. And because they typically don't have a lot of leaf drop, they make great companions for watershapes.

A Shopping Guide

Here are some varieties I have found to be quite use-

ful in Southern California landscapes. All are widely cultivated and available in our region.

❑ **Canary Island Date Palm** (*Phoenix canariensis*). This statuesque palm is one of the most prized varieties in Southern California. These giants frame the entrances to many of the industrial and residential developments built during the 1990s. They boast wide, sturdy trunks, canopies of up to 50 feet in diameter and are great for hot yards in need of shade when the client wants a tropical look. By locating the palm to the side of the yard where it will block the most sun, you benefit from space savings while cooling the area.

❑ **Queen Palm** (*Syagrus romanzoffianum*). Plant this one in full sun and give it plenty of fertilizer: It will grow quickly to 20 or 25 feet tall (and may spurt up to 50 feet) with a canopy of 20 to 25 feet. With a straight, slender trunk, this plant adds great vertical lines to any design, making smaller areas appear bigger. It's also one of the cleaner and more attractive varieties and doesn't require much care.

❑ **King Palm** (*Archontophoenix cunninghamiana*). Similar in appearance and growth habit to the Queen Palm, these are also widely planted and can take shade – even doing well under taller trees. They don't require much ground space, so they can be easily nestled among other plants that will camouflage their trunks or fill in around their bases. They're also low-maintenance and always look clean.

❑ **Date Palm** (*Phoenix dactylifera*). These palms are grown in certain areas around the world for their fruit. They grow up to 80 feet tall and are quite familiar to those of us who travel around Southern California. There's a big commercial concentration of them in Indio, a tourist stop between Los Angeles and Palm Springs perhaps most famous for the Date Shakes at Hadley's, the "everything dates" store.

❑ **Pygmy Date Palm** (*Phoenix robelinii*). Known primarily for its ornamental value, these palms are a much smaller variety of Phoenix. They grow slowly to a height of ten feet (with a frond span of six to eight feet across) and look beautiful placed below the canopy of larger palms or other large-leaf trees or plants. They also make a nice accent

As with any other plants, I'd suggest checking with your local nursery before planning a landscape around a specific variety to see if it grows well in your area.

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next to almost any watershape and can be used in many different landscape styles because their fine-textured leaves blend in easily.

❑ **Sago Palm** (*Cycas revoluta*). Don't be fooled: These prehistoric plants are not actually palms, but that hasn't limited their popularity in the slightest. Larger specimens, which may reach ten feet high and six to seven feet across, are quite valuable because of their slow-growing nature. They've been known to disappear from way too many yards under the cover of darkness. (In fact, this sago-theft phenomenon became so

Remember: Do your research! It's much easier to deal with the death of a \$1 plant than a \$100 plant, so choose wisely.

THE PALM AFTERMARKET

What happens to mature palms that are no longer wanted? Well, if the specimen that needs to be removed has a straight trunk that measures less than 20 feet high, there's a thriving aftermarket in palms.

Just call around to the larger tree nurseries and give them the tree's dimensions. They'll often remove a quality specimen at no cost to the homeowner and may even pay for a nice one. And when you consider the hauling fees you would need to charge to cut down, remove and dump a large palm (they are quite heavy due to the moisture in the trunks), your client will appreciate your sensitivity to the budget.

If you can't find anyone to buy the palm, save on dump fees by allowing the palm to dry out before placing it on your truck to be hauled away.

Another great side-use for palms comes in the early fall, when the Jewish holiday of Purim comes around. Many families spend a week during this time eating all their meals in a stand-alone structure known as a *sukkah*, an open structure similar to an arbor that is loosely covered by palm fronds.

It's become big business in my area for the gardeners to prune off palm fronds in the early fall and sell them to families building *sukkahs*.

—S.R.

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common in Southern California that some people actually chained their palms down so the plants would be destroyed if anyone tried to steal them!) Smaller specimens are not particularly prized or expensive, but become more valuable as they grow.

❑ **Coconut Palm** (*Cocos nucifera*). Also known as Coco Palms, this variety produces one of the world's most valuable and vital crops. They can grow to be from 60 to 100 feet tall and must be maintained: Spent fronds should be pruned off, and the coconuts must be removed before they fall on their own because of the risk of great harm to anyone who happens to be standing below. (In our litigious society, it's best to remove the fruit as soon as it ripens to avoid problems.) Unless your client is intent on growing coconuts, I'd recommend a less dangerous variety. But if only Coco Palms will do, place them away from highly traveled areas.

❑ **Mexican Fan Palm** (*Washingtonia filifera*). This is also one of the most widely planted varieties I've encountered – but it isn't one of my favorites. Unlike the fronds on Queen or King Palms, the fronds on these plants dry out and stay on the trunk, creating a thick mat of dead leaves that offers shelter to rodents and is generally unattractive. If you choose this variety, let your clients know it will require yearly maintenance to keep up appearances.

In the Market

Naturally, palms are most widely available in nurseries in the southern-most United States and become less prevalent as you climb north. But don't hesitate to ask for a variety you don't see on the nursery's grounds: They might be able to order it for you.

And even if you live outside the ordinary palm-growing region, remember that many palm varieties do quite well indoors. One of the most famous and extensive palm arboretums anywhere in the world is found just outside London at the Royal Botanical Gardens at Kew. Kew's Palm House is amazing, and your clients need not be kings and

queens to get this sort of royally tropical treatment.

By surfing the Internet (just type in "palm trees" in any search engine), you can easily find a plethora of sites devoted to palm culture and sales. But remember: Do your research! It's much easier to deal with the death of a \$1 plant than a \$100 plant, so choose wisely. **MS**

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. If you have a specific question about landscaping (or simply want to exchange ideas), e-mail her at sroseld@earthlink.net. She also can be seen this season in six new episodes of "The Surprise Gardener," airing Tuesday evenings on HGTV.

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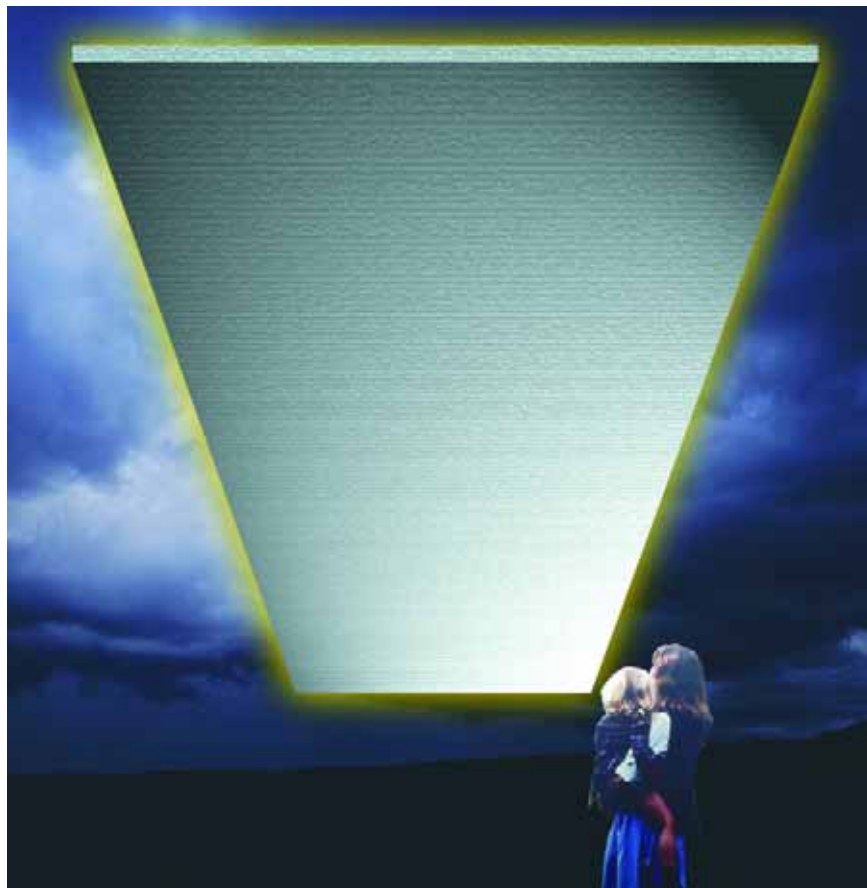
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Making the Grade on Slabs

If you're a watershaper of any kind, odds are that you build concrete slabs.

You build them to create decks, set up equipment pads, establish sub-bases for finish materials – and for a variety of other essential construction purposes. No matter the application, it's important to build these slabs to last, which invariably means building them *correctly*.

This isn't something that's important just for mega-buck projects: No matter whether you're working on \$20,000 cookie-cutter pools or on custom projects at the very highest level, knowing how to construct a slab or a concrete deck properly is a baseline skill we all should have.

Concrete Bases

Reinforced concrete is a wonderful thing – one of the greatest-ever construction materials because you can do *anything* with it.

Just in terms of the finished appearance of decks, for example, your options are virtually endless: You can give it a broom finish or a salt finish or a sponge fin-

Concrete is great, but anyone who has worked with it knows one big thing: No matter what we do, concrete will crack. Whether you're building a bomb shelter, a freeway, a sea wall or a 10-by-20-foot deck, you can presume with great certainty that it will crack.

ish. You can give it a washed- or exposed-aggregate look. You can cover a deck in tile, brick, natural stone or granite. Or you can acid-wash it, give it a monolithic color or use dust-on colors for incredibly artistic visuals.

Concrete is indeed great, but anyone who has worked with it knows one big thing: No matter what we do, concrete will crack. In the case of slabs, it's a natural material placed next to the earth, which is *guaranteed* to move in some way over time that will cause cracks to develop. In fact, I'd go so far to say that *all* concrete cracks, so whether you're building a bomb shelter, a freeway, a sea wall or a 10-by-20-foot deck, you can presume with great certainty that it will crack.

Knowing this, it's up to us to try to *control* that cracking. We can, for instance, beef it up with steel and wire mesh to resist cracking. We can prepare the ground to minimize expansion and absorb movement, and we can build footings that enable the slab to remain stable in the face of prevailing soil conditions. We can also try to determine *where* it will crack.

Fortunately, these measures are neither difficult nor expensive. Even in lower-priced projects – the cookie-cutter projects mentioned above – the cost of improving the strength and reliability of slab construction is in fact minimal. Given

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DETAIL 14

a choice, I can't imagine there's a client out there who wouldn't be willing to spend an extra buck or so per square foot to ensure that the work will look good for *years* to come.

If a pool project costs \$30,000 to \$40,000 and calls for 1,000 square feet of decking, the cost of doing it right will add up to an extra \$1,000 to \$1,500 tops. At that rate, proper deck construction is cheap insurance that should be standard on every project – no exceptions!

To do the job correctly, you have to know the ground upon which you're building. In California, for example, we have a tremendous amount of expansive soil, while in the Northeast, you have to deal with freeze/thaw conditions. These basic environmental factors have an influence on how you build your decks.

As I've stated repeatedly in this column and elsewhere, if you don't know the geology and the soil, you can't do the work – at least not properly.

Down to Details

Here's how I approach a typical slab or deck installation:

❑ We excavate the grade for the decks during the rough excavation for the overall project, allowing for a sub-base of one to three inches of sand and/or gravel. Later, during the "fine grading" in preparation for the building of forms, we set the drains. By this time, the plumbing and conduits should already have been trenched, installed, back-filled, compacted – and signed off by an inspector.

❑ We build forms for footings based on the soils conditions. The footings I build range anywhere from six inches deep in a typical deck in the Western United States or Mexico, for example, to 30 inches deep to accommodate freeze/thaw conditions in places like the

I can't emphasize enough how important it is to raise the steel and mesh above the surface so that it ends up in the middle of the slab, where it belongs.

All the steel in the world won't help a deck if it ends up on the ground beneath the concrete!



Northeast or Europe, where I also design and build pools. These footings provide strength and stability for the slab and prevent the soil from eroding from beneath the deck.

□ Now we add the gravel/sand sub-base and wet everything down to expand the soil to the greatest extent possible.

□ For reinforcement, we use both steel (rebar) and welded wire fabric (wire mesh). The combination of steel and concrete is a great thing, and it works so well because concrete is good at withstanding compression (or weight) while steel provides tensile strength (or resistance to flexing). Depending on the specific soil conditions, I use #3 or #4 rebar on 12- to 18-inch centers in both directions.

It's at this point that many watershapers I know make a crucial mistake: Rather than making sure the steel is raised off the ground before the slab is poured, they leave it sitting on the soil and simply pull it up with a claw hammer as the material is being poured.

This has always amazed me: Given the fact that the concrete is in a semi-viscous state, and given the fact that gravity does what gravity does, it seems certain that the steel that's been abruptly yanked upward during the pour will, whether gradually or abruptly, settle right back down into contact with the soil. This technique doesn't work, and

there are countless cracked decks out there that prove it!

To be effective as a structural element, the steel must be in the center (or even slightly above the center) in the slab. It doesn't do much (if any) good at all lying against the ground. So:

□ Before we pour the deck, we block up the steel on small concrete blocks (or "dobies"). These hold the steel away

from the soil so that it will end up in the middle of the slab – right where it should be. Given a standard slab thickness of four inches (which is really 3-5/8 inches, given the dimensions of the two-by-fours used for forming), we typically block the steel up two inches above the sub-base.

□ Next, we tie wire mesh to the steel, which further works to hold the concrete

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together by holding cracks together when they do occur. As a rule, I use 6x6-10x10 welded wire fabric.



There's a lot of thought and effort that goes into building a concrete slab or deck — and that's particularly true when it comes to setting up expansion joints and score lines so that minor relative motion won't ruin good work.

Finally, we pour, pump or tailgate the concrete on site, with the method determined by the location of the project with respect to truck access and distance. (Our ability to pump is also determined by distance and aggregate size.)

So Much More

One key consideration in setting up a slab or deck that will last is smart use of expansion joints and score lines.

In planning decks and slabs, I place expansion joints strategically to create monolithic slabs that are no larger than eight by eight feet. I make these using flexible joint materials that allow for a certain amount of movement — particularly important in expansive soils.

I also use score lines to control cracking — and I make certain they're deep enough to do the job. I can't count the number of decks I've seen where a crack runs parallel to or diagonally across a score line that simply wasn't deep enough to serve its purpose.

In setting both expansion joints and score lines, I also pay very close attention to aesthetics — but that's an issue that will be better served with more detailed treatment in a future column or two. For now, the last point I want to make is this: Concrete is an extremely versatile material, but it's also unforgiving — and you can't take it for granted!

Managing concrete's inevitable tendency to crack is the job of everyone claiming to be a watershaper, and the thing of it is that it doesn't take much extra effort to design and build slabs and decks that will stand the test of time. **MS**

David Tisherman operates David Tisherman's Visuals, a design and construction firm based in Manhattan Beach, Calif., with offices in Marlton, N.J. He is co-founder and principle instructor for Genesis 3, A Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction.



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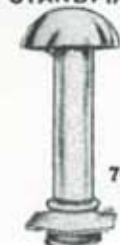


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Custom Integrations

Sometimes, watershaping projects flow smoothly from start to finish. Other times, however, the path to integrating setting, hardscape, plants and water within bounds of the clients' desires and budget can be quite complicated. The project seen here falls into the second category, says designer Kathy Marosz, but 18 months of communication, revision and compromise eventually resulted in a tapestry rich in color, texture, style and sound.

By Kathy Marosz

I'm always looking for projects where I'm brought in to design the entire exterior environment, complete with hardscape, planting plans and watershapes. Working this way gives me a straight shot at integrating all of these major elements into cohesive designs that fit the setting.

But I believe in collaboration, too, and in giving interested clients an opportunity to participate in the process. I listen carefully to what they say, factor in their budgets and then start working toward a suitable design. This integrated approach often requires intensive and extensive interaction with homeowners. Through it all, I'm flexible – but I'm also confident in my abilities, experience and expertise and generally end up installing something that closely matches my sense of the way things should be.

When it works, everything goes smoothly. In the case of the project pictured in these pages, however, the process has been much more involved and is, more than 18 months into it, still ongoing in some areas. Lots of what you see here is different from my original design, and the process has sometimes been frustrating – but I've taken everything in stride as simple tests of my adaptability, creativity and problem-solving skills, while staying focused on keeping everything headed in a positive direction.



The home's design and feel led me to work with a controlling set of lines and circles that start in front of the entry courtyard with a small cantera-stone planter (A) and then move to the front door around a small courtyard fountain (B). We picked up the line and materials in the backyard with a fire pit (C).

Design Attitudes

As a designer, I strive to provide my clients with plans that accommodate their desires but that also reflect my abilities and expertise. Sometimes establishing that balance requires give and take as I find out what the clients like and don't like. At those moments, I see that I'm almost like a lens through which my clients discover what it is they're really after.

On the project described in the accompanying text, the result of these interactions was a series of important alterations to my plans. Some didn't matter to me at all, such as their insistence on using travertine for the barbecue's countertop. Yes, concerns about using a material that's so difficult to keep clean gave me second thoughts, but it was what the clients wanted and makes them happy.

By contrast, numerous changes they insisted on in the planting plan almost certainly will cost them, sooner or later. In demanding lushness right away, they've left no room for the plants to grow to maturity – and there will be problems as the densely planted specimens compete with each other for sunlight, water and space beneath the ground. Some plants will die; others will need to be removed.

So I wouldn't have used travertine, and I would have worked the plantings differently. But in the grand scheme of things, these are maintenance issues rather than fundamental design compromises. I can live with this sort of disappointment!

– K.M.



A Tri-Level Approach

When I first visited the site, the clients let me know that they wanted a spa, a natural cascading rock waterfeature, a sun deck and associated landscaping. The primary issue from the clients' perspective was that they wanted to see the waterfeature from the formal living room, which opens to the backyard.

My initial thought was that this would work, but that the expansive yard needed a more substantial watershape to fit the overall scale of the space. So we talked about expanding the project. Because the homeowners have grown children who

often visit with several grandchildren, the idea of including a swimming pool made sense to them. With the kids in mind, we also decided to include a pond as part of the rock waterfeature to double as a shallow wading pool.

From the outset, the clients were adamant about wanting lots of natural rock with water flowing in various and interesting ways. I suggested that it would be interesting to develop a design that would be seen differently from various vantage points in the yard. I did so because one of the primary challenges I saw here was making an elevated rock water-

feature in the center of a flat yard appear to occur naturally. This is where the “tri-level” feature of the design came into play.

Balancing all these factors, I proposed a design that included a raised spa alongside an “island” of decking that would be completely surrounded by water. From its own level, the pool would spill into a small, rocky pond via a rock waterfall. This placed bodies of water on three levels, all woven together with cascades, rockwork, finish materials, colors, textures and plantings.

The pool, spa and waterfeature were at the core of the design – the culmination of styles and materials that would be woven throughout the entire exterior program. The plan also integrated the backyard with lines of sight established in the front yard: The waterfeatures stood in alignment with the courtyard at the front entrance to the house and fit neatly within the primary visual flow through

the interior of the home itself.

We went through several different design iterations, making dozens of adjustments both large and small. Many of these changes occurred later, during work on site. We focused a lot of attention on elevation changes, for example, moving from relatively formal structures to organic shapes, and from tile and other hardscape material to natural rock and plantings.

As we went back and forth more than once with this set of ideas, the original plan to create rocky spillovers from pool to pond “morphed” further into a pair of vanishing edges – a strategy that enabled us to take advantage of the elevated swimming pool.

I accepted these alterations because the bones of the project were intact. In fact, the homeowners loved the idea of the island deck surrounded by water on different levels and also really liked the concept of creating a structure that would

look different from every angle. In other words, I had plenty to work with here.

As the design progressed, it truly became a three-dimensional piece: The three small vanishing edges (the two from the pool and another one from the spa), the asymmetrical shapes, the rockwork cascades and the plantings all began working together to create a complex set of focal points and views.

Flows of Interest

There’s a lot going on in this backyard, and it’s that way for a reason: Although this is an elaborate, estate-sized home in an upscale, gated community, the surrounding views and adjacent homes are all pretty drab. That’s why the design focused on the drama that comes with elevation changes, right from the start.

To achieve that effect – and to make the elevations seem as though they were there before the house was built – we had to do



Along the side of the house, we set another cantera-stone detail, this one a wall fountain (D). This is where we introduce visitors to the look of the blue glass tile used in the spa and pool.

a great deal of grading and shaping. We also focused a lot of attention on the rock waterfall at the front of the watershape: As you come through the French doors on the back of the house, you immediately see the waterfall alongside the sweeping contours of the steps leading up to the spa.

Our desire was to use this naturalistic cascade as an instant attention-getter, a destination spot that would draw visitors through the house to explore the spaces outside. Once visitors stepped through the French doors, the attraction would be augmented by the flowing curves of the staircase – a key transition point that would sinuously introduce the more formal aspects of the hardscape.

Working out this relationship of natural and formal in the watershapes was the biggest challenge in developing an exterior design that flowed easily through the interior and exterior spaces of the Mediterranean-style home. In doing so, I emphasized the hardscape plan as a means of integrating visual elements that

begin in the front of the house, flow through the house and the side yards and move to the back around a barbecue area and, finally, the swimming pool.

The basic program involves straight lines moving into circles, giving the design a crisp geometry that lends the work its formal feeling. (This formality is also expressed through the use of tile.) We started with the grand entry staircase at the front of the property and a supplemental entry path from the driveway that leads you to the front of the house.

These paths converge at a small circular patio in front of an arched, gated portal to the formal courtyard entry. Here we placed a cantera-stone planter that introduces the custom shape of a cantera-stone fountain set inside the courtyard (and of one of two fire rings in the backyard). Throughout the pathways and patios are low walls with small pilasters at the ends, all topped with light-colored concrete capstones.

The fountain flows as an intimate trickle less befitting its formal shape and creates a

beautiful visual and aural centerpiece for the enclosed space. There's also a small wall fountain in a side yard that provides an interesting point of transition between the front and the back yards: It picks up the cantera stone used in the front planter and courtyard fountain – and introduces a vibrant blue glass tile found later in the pool.

Fluid Complexity

This focus on integration – on flow from front to back and on use of common themes and visual links throughout the setting – was a major task for us as we worked out the visual balances of the project. At the same time, we also had an amazing challenge in working out the hydraulics that would make all these watershapes actually *function*.

To put it mildly, the hydraulic design here was not simple. For example, the small rock waterfeature feeding the spa circulates hot water and is completely separate from the rest of the waterfall systems. It's a small trickle compared to the



Singing the Blues

I'm not a big fan of the familiar, single line of blue tile used at the waterline in standard swimming pools, so I resisted when my clients fell head over heels in love with the blue glass mosaic tiles we ended up installing on this pool. The challenge with this material was integrating the look with the natural rock boulders and the bullnose brick cop-

ing they also wanted.

I would have preferred something in aqua or green, but the tile choice came up early enough in the project that we were able to pick it up in details we placed elsewhere in the environment. As a result, the colors are familiar enough that, by the time a visitor reaches the pool, the choice seems appropriate. In addition to using the blue tile throughout the project, we also added the same blue colors in the aggregate finish on the interior surfaces of the bodies of water.

As we reviewed our mosaic options with my tile supplier, we didn't see the right mix: They offered one pattern that was close, but it was a bit light, so we asked the supplier to create a custom mix by replacing the lightest-colored tiles with darker ones. This shift in hue made the whole surface much deeper and richer.

As can happen with any custom order, we ran short by a few square feet. Instead of waiting for an entire new order to be filled, we made our own mosaic by mixing up individual tiles we had and placing them in an appropriately random pattern – a learning process in itself!

– K.M.

The island of decking is at the heart of the design (E) – the place from which the whole of the design radiates. You reach it via the natural “stepping stones” that cross in front of the waterfall and through the pond (F).

main cascading waterfall feeding the pond, but we needed to make it appear as though it was part of the same system.

We also had to accommodate the fact that the pool was to be much larger than the pond, which led us to install two intermediate surge tanks behind the vanishing-edge trough on the backside of the pool. This approach let us manage all the movement of water and potential surge over the two edges without having to worry about large changes in the pond’s water level or in that of the vanishing-edge trough. We also set up three skimmers in the pond area to function like gravity-fed drainpipes into the surge tanks and the automatic leveling system.

Once we hit on this alignment of vessels, troughs, skimmers and tanks, there was still lots of work to do in establishing positions for the skimmers and in setting the elevation of the surge tanks in relation to the equipment pad and the water level in the pond. We also needed to work out the basic circulation plan, which was complicated by the fact that we were installing an in-floor cleaning system with its own, independent requirements.

Jeff Freeman, a hydraulics consultant



From below, the rock-encrusted watershapes have a “natural” feel. Up on the deck, however, the expanses of blue tile and crisp elevations lend the setting a much more formal look that blends much more easily with the style of the house (G). Finding the right perceptual balance between formal and natural was the principle design challenge we faced.



Making complex designs work is no small task. In this case, the combination of multiple levels, lots of waterfalls, lots of returns, an in-floor cleaning system and multiple hydrotherapy jets turned our pipe formations into porcupines, especially under the spa (H). We also spent a lot of time figuring out the line of steps leading up to the spa. As the forms show (I), the shapes are meant to project natural contours that might have been found on the undisturbed site.



Coming and Going

The project described in the accompanying text comes with a fairly complex hydraulic system.

The waterfeature alone has three pumps: Pump No. 1 draws from the pool and returns water to the spa in a floor-jet loop. This flow causes the spa spillway to overflow into the pool and also feeds the spa's recirculating waterfeature. Pumps No. 2 and/or No. 3 are part of the gravity-feed system with suction from the surge tank. Water is returned via a looped manifold (with ball valves on each of eight separate return lines) to the pool to run the vanishing edges and five rock waterfeatures.

One vanishing edge overflows into a trough that empties directly into the surge tanks below it. Water flowing over the other vanishing edge (and several of the rock waterfalls) flows into the pond and is then gravity-fed via three skimmers (each with its own four-inch pipe) back into the tanks.

—K. M.

with Fluid Logics in Southern California, did much of the heavy lifting on the hydraulic design. He tackled the critical issues of plumbing and tank size and configuration, pump sizing, equipment selection, valve placement and equipment-pod layout. We also spent a great deal of time together figuring out what would happen in different scenarios and in troubleshooting the overall plumbing schematic.

When we fired things up for the first time, we ran into a small glitch that had to do with the automatic leveling system. Beyond that, the system worked as planned.

Stubborn Perfection

People who know me will tell you that I'm a perfectionist and that I don't yield easily when I believe I'm right. In this case, however, the key to success involved a great deal of bending on my part. My clients did their fair share of bending, too — and yielded complete control to me in areas where I felt it was most important.

There are parts of this design that are many steps away from my original vision, but the result is a project that works — visually, stylistically and functionally — as a unique amalgam of design elements and ideas. Most important, it's a project that makes my clients proud and happy.

This joy is perceived especially at night, when everything's quiet except for the sounds of water and when the water's edges, the landscaping and steps are articulated by fiberoptic lighting. That's when the frustration evaporates and the sense of integration is quite complete. **WS**

There's a fun detail we developed to hide one of three skimmer lids: We used a specialty skimmer lid that's about two inches deep. Typically you would pour matching deck material in this lid, but in this case, because the skimmer was placed in a lawn area, we put sod in the lid (J). Both lid and tray lift off easily to allow access to the skimmer (K).

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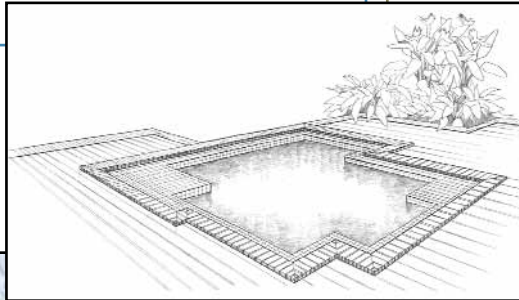
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Even for a firm that specializes in massive natural-stone watershapes, this Pennsylvania project was one for the record books. Working for an enthusiastic client who demanded beauty and visual drama on a truly enormous scale, the staff at Glacier Inc. stepped well beyond the usual in renovating a 78-acre private lake while creating a long, cascading stone stream and waterfall – with a grotto thrown in for good measure.

Up on



Rocky Top

By E.J. Biernesser,
Pete Biernesser
& Mike Raible



When you work on projects in which stone is commonly measured in the thousands of tons and streams are frequently described in fractions of miles, you're not easily impressed by size. This job, however, was remarkably vast – a project driven by creative passion and a client's desire to turn a singular vision into reality.

It's the kind of opportunity that doesn't come along every day, and when it did, we knew we'd have to give it everything we had.

Our company, Glenshaw, Pa.-based Glacier Inc., is a design and construction firm specializing in large natural and naturalistic bodies of water, and most of our work includes creative rock formations intended to mimic nature. Through most of the past two years, we've had the opportunity to work for a client with big plans for his hilltop estate on the slope of Pennsylvania's majestic Mount Davis.

His 2,700 acres of forest land once framed a natural 78-acre lake well stocked with trophy rainbow and brook trout. In 1998, however, this picturesque setting was ravaged by a half-mile wide tornado that leveled his mountain retreat and surrounding woodland in a matter of minutes. Our mission: rehabilitate this now-barren landscape and lake-front to a level of beauty and functionality exceeding the original.



A

HEAVY DUTY: Our company operates quarries near our headquarters and in Maryland and Northern Pennsylvania, so we knew what we were getting into in setting up a quarry on our client's large estate. The distinction here was that we had to cut and build our own road from the outcroppings back to the construction site. Having the right equipment was essential – specifically, a 40-ton excavator for grappling with the stones (A) and a 30-ton off-road truck for transferring materials to the job site (B).



B

WALKING ON WATER: Of all the details in the project, this was the toughest to execute. Working lakeside with a 40-ton excavator shifting around 10-ton stones on a base of muck was no picnic (C), but we took a careful, considered, gradual approach and slowly worked our way out from the shore (D) to set up a half-submerged walkway (E) that, now complete, is enough to make any angler smile (F).



C



D

LIVING LARGE

As we took our first two-and-a-half-hour drive to the site, we had no idea just how devastated the property had been. After several hours of site analysis that involved assessing the condition of the lake and surveying the property, we concluded that the first step in the watershaping aspect of the project would be restoring the lakefront with massive amounts of stone – both for bank stabilization *and* aesthetics.

As luck would have it, we also discovered that we would be able to quarry all of the stone we'd need right there on the property.

The indigenous sandstone is of excellent quality and has a beautiful gray patina, and we had an advantage in the fact that it is quite similar to stone we extract from the quarry we own and operate near our headquarters.

We knew well that getting at the stone and moving it from remote locations on nonexistent roads across rugged topography wouldn't be easy. We also knew that, given the amount of material we'd need, quarrying on site would save hundreds of thousand of dollars in shipping costs.

So our first steps involved cutting and building a roadway to reach the outcroppings we'd selected for quarrying. Then came setting up large staging areas for processing the stone and transferring it to trucks. Finally, we were ready to start

hauling stones through the rugged terrain to the lakefront.

Our design called for creating a 500-foot stone shoreline and boat-dock area in imitation of a northern glacial pool. A 250-foot mountain stream was to cascade from a massive barn structure to the rocky shoreline. And we would round out the project by installing thousands of feet of stone pathways and naturalistic formations that would connect the main house to the barn, boat-dock and lakefront areas.

Our client is an avid sportsman with a strong interest in fly-fishing, which inspired us to an interesting and exciting design twist: Leading into the lake, we set up sequences of stones at various elevations just above or just below water level that extend 40 feet beyond the lakefront.

These (mostly submerged) stone pathways gave the project a character and level of difficulty unlike any watershape we had ever tackled. The result is a set of structures that enable the client literally to walk on water to prime fishing spots – but as we discovered, it was like moving heaven and earth to pull off the effect.

WATER WALK

In planning the project, we knew we'd need a steady supply of massive boulders of varying shapes and sizes. To eliminate potential headaches, we brought in two huge pieces of equipment – one a 40-ton

excavator for the roadwork, excavation and staging, the other a 30-ton, off-road truck for hauling – for the duration of the project.

For six long months, we quarried the native stone, pulling out some specimens so large that a single piece filled the bed of the 30-ton truck. In time, all these stones were transferred to a series of staging areas we'd set up along the lakeshore and stream path.

Our site work began with the toughest and riskiest part of the entire project – the “walk on water” stones. We all saw this as a wonderful concept in discussion and theory, but we were initially daunted by the challenge of moving a large number of 15-ton boulders into the middle of a muck-bottomed lake.

We recognized quickly that we'd have to claim this underwater turf foot by foot and began by reaching out into the water the full length of the excavator's boom, removing the muck and backfilling with a base of crushed limestone. Then we placed large boulders (with less desirable appearances) on the limestone and carefully advanced the excavator across the newly placed material – repeating the process again and again while moving farther and farther into the lake.

This process of transferring rocks the size of Volkswagens was treacherous, because the machine tracks were always completely submerged in water muddied





G

Point to Point

In addition to the extensive stonework installed for the lakefront and stream, this project also involved construction of more than a half-mile of intricate pathways connecting the main house to the boat house, barn and various points by the shore and along the stream.

Our prime goal was to make these pathways so they would look like naturally occurring outcroppings rather than man-made walkways. We also sought to create paths that would beckon the client and his guests to explore the many views and hideaways found in the landscape.

As we selected and placed the stones, we always visualized walkways that were wide enough to afford lots of personal space for pedestrians, but not so boulevard-like that they would lose their intimacy. Achieving this balance of scale required a great deal of stone-by-stone decision making guided mostly by feel and common sense.

The pathways we established also called for constructing a pair of bridges over the cascading mountain stream. An upper crossing near the barn required a span of 11 feet — easily accomplished using a single three-ton slab of sandstone. A lower bridge was somewhat more challenging, as it required special quarrying of a (quite cumbersome) piece measuring 17 feet long, 7 feet wide and more than 30 inches thick.

Both bridges were set and fit to capture the geometric characteristics and natural aesthetics of each stone while providing the necessary structural support.

— E.J.B., P.B. & M.R.

by the removal of all the muck. The operator literally had to “feel” his way across the rocks using the boom and bucket.

Once the subsurface work was complete, we began selecting stones that would break or lie just below the surface. We focused on dimensional tolerances, interlocking contours, walkable topsides and overall aesthetic appeal, then delicately fitted our choices into place using the excavator and heavy-duty lifting chains. All stones were carefully stacked, secured by weight and their interlocking contours.

The mechanical end of this process was difficult, but manageable. What really hit our crew hard was the need to wade in the 58-degree water for hour after numbing hour!

ROCKY SHORELINE

With the northern-glacier-lake model in mind, we next set to work on the shoreline and the boat-dock area.

We’d already screened through the stone possibilities and had selected many that would be used in these areas, but before we could begin with excavation or placement, we had to make some basic decisions about elevation of the new stone shoreline in relation to the boat dock and the lake’s water level.

With considerable review and discussion, we de-

terminated that by setting the stone material to rise five to seven feet out of the water, we would be able to achieve the desired visual effect while providing practical protection from erosion.

Any greater elevation would have been visually overwhelming, while any less would compromise the client's mandate for massive, eye-catching stone structures.

After excavation, we began by setting up a series of massive base stones, again using those that were not so visually desirable – but large and flat enough to provide a good foundation for the tonnage that they would be asked to support. Once the base stones were placed, we chose each subsequent stone by shape and contour to create interesting cantilevers for climbing and casting.

On the top layer, these “finish” stones were generally in the 10-ton category –

Self-Reliance

Our firm specializes in massive products that involve natural stone, but this one was enormous even for us. Pete Biernesser developed the design, and we completed the project, start to finish, with a five-man crew!

It's an example of what can be accomplished by a small workforce through careful project management, planning, hard work and true dedication.

– E.J.B., P.B. & M.R.

eight to ten feet wide, 20 feet long and measuring two- to three-feet thick. These large, flat pieces enabled us to establish a seemingly endless variety of perches, pathways and steps along the entire stretch of watershaped shoreline. They also served as foundations in certain places for triangular-shaped boulders we used as “cheek walls” strategically placed adjacent to stairs and defined pathways.

A MOUNTAIN STREAM

Far and away the most noteworthy phase of the project (from our perspective, anyway) involved the construction of a 250-foot-long mountain stream and waterfall.

The stream was designed to send 500 gallons of water per minute through a “glacial moraine” and then plunge it ten feet into a stacked-stone grotto. Aside

LAKEFRONT VIEWS: Our client was intent on having a rock-lined, glacial lakefront in front of the main house (G). We met the need by setting up a foundation of massive base stones atop which we set choice “finish stones” set up on multiple levels with interesting cantilevers – the whole serving as a waterfront walkway for our client and his guests (H).





I



J

ON STREAM: The result looks like a glacial byproduct (I), and you can rest assured that the effort involved in making it look that way was just as titanic. Set up on a foundation of 200 yards of concrete, the spring-like source of the water is placed in the middle of the hillside, about halfway between the main house and the barn. It feeds the stream at a rate of 500 gallons per minute down to a waterfall that cascades into the lake (J). The process of “tuning” the stones to make the right sounds was a major part of the project (K), as was setting up a grotto that is now hidden behind the waterfall and overlooks a rock-bottom pool (L).



K

Stone Accents

Our client relied on us to take care of the stonework and watershaping phases of the project, but he also called on us to do a bit of basic landscaping, too.

He wanted particularly to rehabilitate the grounds immediately surrounding the main house. We were happy to oblige with a low, stacked-stone wall built into an existing wooden arcade set off by a series of planting beds (left) and other planting areas marked by sand-stone centerpieces (right).

— E.J.B., P.B. & M. R.



from achieving a dramatic and natural appearance, the client wanted enough sound so that he could hear the splashing water through his bedroom window, several hundred feet away.

Construction of the stream, waterfall and grotto took six full months and ultimately consumed 125 cubic yards of concrete, 750 feet of 4-inch piping and 3,000 tons of sandstone – not to mention a tremendous amount of patience, stamina and creativity on the part of our crew.

In order to achieve a natural appearance and generate the desired sound, we adjusted the water depth in a series of pools, channels and cascades. This en-

abled us to vary the appearance, control the speed of the water flow and effectively “tune” the stream’s sound by adjusting the size and position of the stones.

By the time we began the waterfall phase of the project, we’d also decided to create a unique swimming area with large stone steps leading down into a pool and a rocky grotto veiled by the main waterfall. The bottom of this pool features enormous one-to-three-ton, interlocking flat stones fit so snugly that they offer an undulating, easy-to-walk-on bottom free of lake muck.

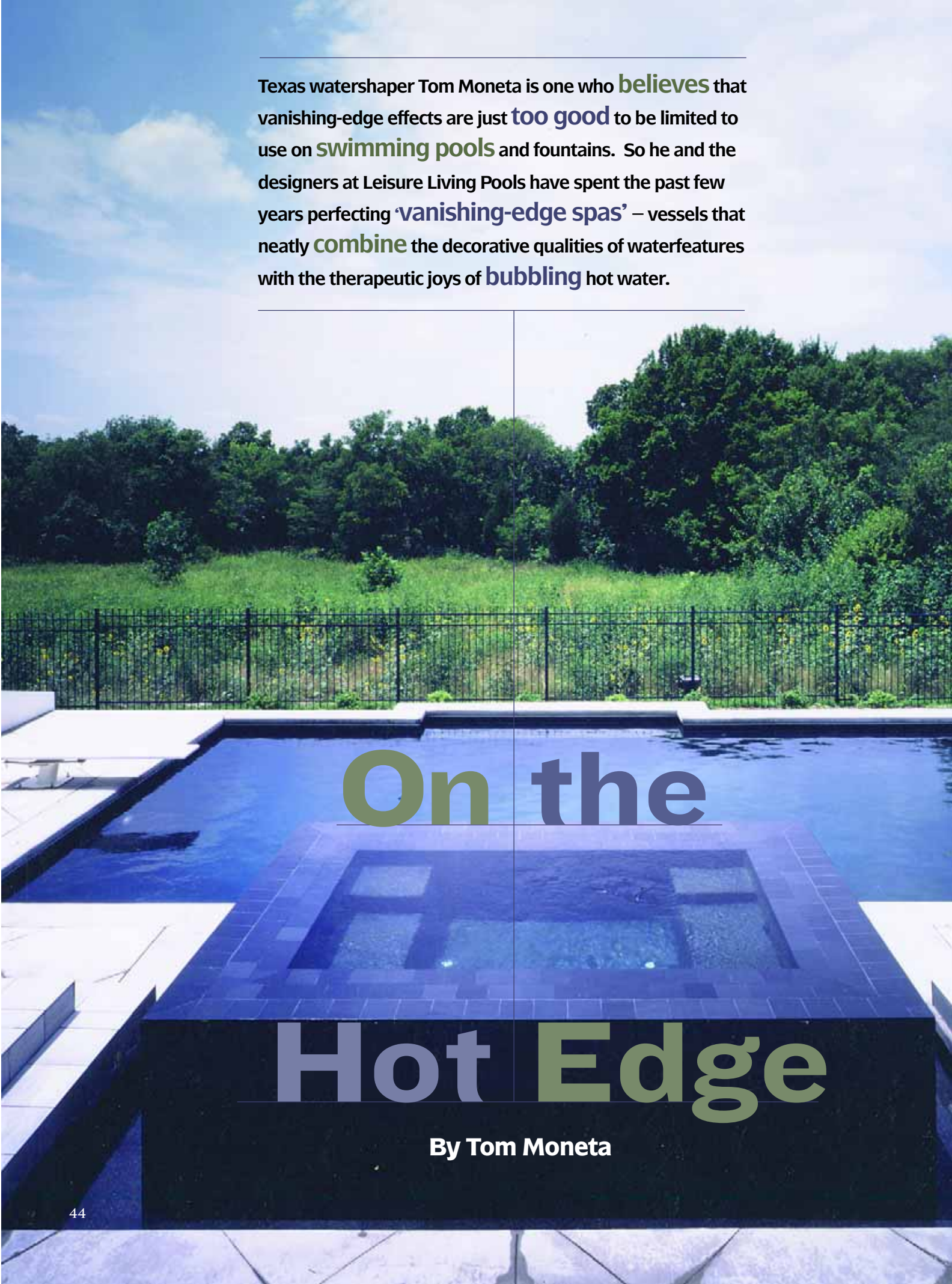
Taken all together, this project captures the imagination with its size, variety, and massiveness – and kept us engaged

through its complexity and the huge construction and logistical challenges it offered. Although our firm specializes in massive stone watershapes of a sort typically associated with large streams, ponds, rivers and lakes, the scale and detail of this project trumps all the others we have completed so far.

At this point, the daily trials, tribulations and triumphs of the project have given way to the finer nuances of the project: the dimple of a fat trout rising to a June mayfly, the early morning dampness of an August fog, the smell of a November campfire and crisply painted December sunsets. [WS](#)



Texas watershaper Tom Moneta is one who **believes** that vanishing-edge effects are just **too good** to be limited to use on **swimming pools** and fountains. So he and the designers at Leisure Living Pools have spent the past few years perfecting ‘**vanishing-edge spas**’ – vessels that neatly **combine** the decorative qualities of waterfeatures with the therapeutic joys of **bubbling** hot water.



On the Hot Edge

By Tom Moneta



Crisp Lines

In this project, we were after an extremely modern look for a dramatically contemporary setting – and found it by making this dark cube seem to erupt from the light, acid-washed concrete decking that surrounds it.

Broad stairs descending from the back of the home to the pool deck essentially surround the spa, bringing the viewer into close proximity with the reflective surface of the water from a variety of angles. And all of this sharp modernity offers a striking contrast to the greenery lurking beyond the property line.

Increasing numbers of our clients are asking for more from their watershapes – so many, in fact, that we’re seeing an unprecedented blurring of the lines between swimming pools, spas and the full range of decorative waterfeatures. This demand is particularly strong in one area: In addition to projects that are functional, our clients want them to be visually compelling as well.

This need has inspired designers at our firm (and elsewhere) to all-new levels of creativity. In certain instances, we at Leisure Living Pools in Frisco, Texas, have answered the call with spa designs that enable us to provide our clients with all the soothing pleasures of hot water while fully harmonizing these small vessels with the architecture of some of our most upscale clients’ homes.

The four raised vessels pictured here are all topped by 360-degree overflow edges. In three cases, the spas work in conjunction with geometric swimming pools; in the fourth, the spa is used in contrast to freeform designs. We’ve also done projects in which vanishing-edge spas serve as stand-alone watershapes in smaller spaces.

Whatever the setting, we see this as a new breed of hot-water vessels – versatile spas that are reasonably simple to design and build and that invariably have made big impressions on our clients, their families and guests.

Natural Evolution

These spas are natural offshoots of vanishing-edge swimming pools, a striking design concept that is by now widespread enough that many of our clients have become somewhat blasé about it. As startling as that reaction may seem, and as much as they’re telling us they like the vanishing-edge concept, these clients want us to take the next step in the evolutionary process and come up with something that once again stands out from the crowd.

Our response in many cases has come in the form of a vanishing-edge spa. This design enables us to take advantage of the mirror surface and knife-edge contour of the vanishing edge without worrying so much about the nature of the backdrop as we do with swimming pools and whether a given setting lends itself to the use of a spillover effect.

In most cases, we’ve set them up either as perfect squares or as circles and have finished them in dark tile, which gives the entire spa structure a distinctly sculptural appearance. That’s just what our clients are after: a sculptural focal point that draws the viewer’s eye into the outside environment from inside a home – something that’s dramatic, but not overwhelming.

It’s a simple twist on an established effect as well as an elegant solution that gives our clients that “something special” they all want these days.



Twin Reflections

This project demonstrates the flexibility of the vanishing-edge-spa design. Here, the spa is mirrored by a waterfeature at the other end of the classically inspired pool and Mediterranean-style courtyard.

In this case, the designer wanted the entire watershape complex to work as sculpture, as something that would immediately capture the eyes of guests entering via the front door and draw them outdoors to see more. Once outside, it's easy to see how the components relate to one another, from the circular spa and waterfeature to the pool's radiuses and the circular details at the roofline.

Fenced In

Here, the square vanishing-edge spa enabled us to add a dramatic visual touch to what is a very compact backyard space.

I have to mention it once again: These vanishing-edge spas offer a unique sculptural quality and a uniform reflective surface that adds much more finesse to a setting than would an ordinary (and merely functional) raised spa.

Climbing In

In developing our vanishing-edge spas, we carefully considered how they would actually function as spas.

To that purpose, we spent a good bit of time informally watching how people get in and out of raised spas, basically because we had a concern that the wet edges and the narrow troughs that surround the bases of vanishing-edge spas might create obstacles to their use.

We found no problems. With almost any raised spa, bathers should sit on the edge first and pivot to swing their legs over the edge and into the spa – which seemed to us a perfectly sensible way to get into a vanishing-edge spa as well.

There's a minor customer education issue here, but since we've been building these spas, our clients haven't had a single complaint about getting in or out.

—T.M.



Better Building

As is the case with any vanishing-edge detail, building a vanishing-edge spa requires a great deal of care in construction. The hydraulics are pretty basic – not very different from what's needed for any raised spa that spills by gravity into an adjacent swimming pool – but the need for accuracy in leveling is obvious if you want true 360-degree flow over a completely wet edge.

Designing these spas with finish materials in mind can also be very important, especially with tile. To simplify things, we set dimensions as much as possible so that tiles will fit neatly across the walls without cuts or odd trim pieces that disrupt continuity and the visual effect.

If anything, the need for tight tolerances is greater here than it is with a swimming-pool-scale edge: Because a spa is small and the entirety of the perimeter can be taken in at a glance, any flaws in construction are *extremely* noticeable.

– T.M.



Perfect Circle

For this project, the homeowner wanted the spa to work as a central visual element in the design – and a spot from which to enjoy a prime view of the adjacent golf course.

Here, both the spa and the pool have vanishing-edge details, but the sculptural quality of the dark spa amid lighter decking and the bright pool finish makes the two vessels quite distinct from one another – thus fulfilling the client's desire for a truly functional beauty. We also enhanced the sculptural effect by mimicking the spa's shape in pedestals and tables scattered around the terrace.

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For more than two decades, California artist Rafe Affleck has been combining the crisp rigidity of stainless steel with the shimmering reflectivity of flowing water to create a substantial and distinctive body of work. His sculptures, in which liquid is much, much more than a mere accent to metal, grace dozens of commercial, public and private spaces, in every case making bold statements that puzzle, delight, sooth or inspire those who pass by.

BY RAFE AFFLECK

l Island
al Bank



From the beginning of my career as a sculptor, I've mostly given myself over to two simple elements – metal and water – and have tried to develop approaches that turn one into an extension of the other.

I like the sense that a sheet of flowing water completes the simple stainless steel shapes I create. I also like to play with illusion by creating the impression that the water appears to come from nowhere. And I like getting involved in the hydraulics of laminar flow by making the water emerge from steel as a smooth, cohesive sheet.

In a sense, I draw constant inspiration from knowing that I could work with these two elements for my entire life and never come anywhere close to exhausting the creative ideas that await me.

AN ARTIST'S LIFE

As I see it, art really is a way of life for me. It definitely pays the bills, but it's not a job and I rarely consider it to be work. I've been at it for more than 20 years now and have completed hundreds of projects from small to monumental, but I'm always surprised when I look at my list of commissions and see just how much I've done. Time really *does* go by when you're having fun.

I was a Midwest transplant who moved to the West Coast at an early age, when my dad followed a business interest to Los Angeles. As a child, I spent hours playing with the backyard hose, making waterfalls and troughs and pools of water. As far back as I can remember, I've had this fixation with water. My dad, a mechanical engineer, encouraged me to work with tools and build things. This set an ideal foundation for my later interest in sculpting.

In high school, I developed keen interest in design and went on to study the graphic arts in college. Upon graduation, I was hired by North American Aviation to work as a graphic artist in their security sector and subsequently worked as an art director for a variety of graphic-arts firms in the Los Angeles area.

It was during this time that I became interested in sculpting and started with metal wall

Photos courtesy and artworks ©Rafe Affleck. All rights reserved.



CRESCENTS

The pieces pictured here are among dozens of sculptures in which I've explored combinations of stainless steel crescents and arcing sheets of water. These are still among the most popular of my designs, and to this day many prospective clients say they want some sort of variation on this theme.

It was in designing these pieces that I really got the hang of working with laminar flow. In other sculptures I've seen, sheeting water usually breaks apart at about three feet out. By balancing the length and width of the nozzle's opening with the flow and pressure of the water, I've been able to create sheets that hold together up to ten feet.

sculptures of various sizes. These early works were well received, and several commissions followed. Before long – and in what seemed a completely natural progression – I started indulging my childhood affinity for water by incorporating it in my work.

To house my many large projects, I built a three-story studio in North Hollywood, where many of my monumental sculptures have since been created. I have three 30-foot chain hoists in the main studio that enable workers to move the large metal pieces.

I do all the design work myself, and a handpicked staff assists me in fabricating

my sculptures. I also work with my clients and an engineering firm on various technical specifications, such as the size of the pools that will contain my sculptures as well as their placement and hydraulics.

All pieces are pre-assembled at the studio and evaluated in a 13-foot-diameter test pool before being shipped to the job site. The test pool is also used to set up functioning models and prototypes of new designs.

COMPANION PIECES

This isn't the kind of activity that lets you keep regular hours: I've been known to wake up in the middle of the night and



WINDOWS IN SPACE

For this project, set in the plaza in front of an aerospace company, I used the architecture of the adjacent building to inspire the design. The square windows appear to be tumbling through space, an effect accentuated by the flow of the water.

I'd say that more of my work draws inspiration from nature than from surrounding architecture: I'm a big fan of Japanese art and have a deep appreciation for its devotion to simple, minimalist forms. But in this case, these window forms made sense.



SIMPLE ELEGANCE

I'm often surprised and frequently amused by what art critics and other observers say about my work in their drive to find meaning where none is intended – and this is one of those pieces over which you could probably go crazy trying to affix some interpretation to it.

The truth of the matter is that I designed this because I thought that a simple steel column with a dual-action crevice would be visually interesting – no more, no less. The fact that it works well against the landscaping of a private residence is also nice.

go to work on a new idea.

Through all those long days and nights, I've never grown tired of finding new ways to combine stainless steel and water. They work well together in so many ways, and I've spent countless hours working, for example, on details of designs that use arcing sheets of water that visually defy gravity.

There's much to be done to get these effects to behave the way I want them to, and the same goes for the visual effects I create for all sorts of designs in which my basic goal is to make these contrasting elements of water and steel appear as though they're suspended in space.

In many of my designs, the sheeting water picks up the line of the stainless steel and completes the shape. Visually and metaphorically speaking, the water *becomes* the steel just as the steel *becomes* the water. In other situations, however, the water might simply trickle over the steel surface – or spray wildly into the air. I've also done pieces where the work sits above a reflecting pool of perfectly still water.

I'm passionate and playful with steel as well. Just as water has differing reflective qualities depending on how I manipulate its flow and surface textures, for example, stainless steel can be finished to a variety of reflective looks.



EARTH SCIENCE

This piece was built for a wealthy couple in Rancho Santa Fe, Calif. In this case, there is some obvious symbolism, and lots of people who have seen the piece find specific California references in its etch-

ing and cracks and other “seismic” qualities. It’s all there in plain view.

Also of interest is the unusual use here of the low, grass-covered knoll as a key design element.





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MOST OF THE TIME, THE IDEAS FOR THE DESIGNS JUST COME TO ME IN WAYS THAT ARE STILL A MYSTERY TO ME. WHEN THEY EMERGE, I GET EXCITED ABOUT ALLOWING AN IDEA TO LEAD ME IN A CERTAIN DIRECTION.

COMPOUNDED REFLECTIONS

As I mentioned in the accompanying text, I often enjoy playing with the reflective qualities of both steel and water. In this case, the mirror finishes on the bent panels definitely reflect the surrounding area and the water, especially the stark yellow line at the bottom of the pool.

What I like about this piece is that the reflective effects work both ways, with the water reflecting the panels and the images they capture just as brilliantly as the panels reflect the water and its features – a powerful, compelling and entertaining conjunction of liquid and metal.

I've done highly polished pieces that have a mirror surface, while on other projects I'll etch, score or even tarnish the surface to create a variety of textures. I also enjoy creating effects where reflections seem to follow viewers as they move around a piece – a house-of-mirrors effect.

The malleability of these two materials and the capability I've developed through the years of working with them as extensions of one another have led me down some amazing pathways. As I've explored some of these avenues, I've learned to appreciate the fact that stainless steel resists corrosion and holds up well over time, even in the presence of chlorinated water or the occasional vandal or prankster.

TO THE POINT

I've never been one to intellectualize what I do: I just do it.

Most of the time, the ideas for the designs just come to me in ways that are still a mystery to me. When they emerge, I get excited about allowing an idea to lead me in a certain direction. I've also enjoyed developing my personal design vocabulary and like to improvise around familiar visual ideas in different ways. My crescents, for example, are a distinct trademark of my early work and can be found in several pieces.

More than anything, though, I'd say I enjoy the design process – and especially love trying new ideas. Still, there's a lot to be said for seeing the finished product in place and watching people enjoy it! **WS**

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FIBEROPTIC BROCHURE

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PENTAIR POOL PRODUCTS has published a four-page, full-color brochure on the FIBERworks family of lighting products for pools, spas, waterfalls, cascades, fountains, bubblers and aquatic landscapes – the PG2000 Photon Generator, GlowRods, Cascade Light, FiberWands and AmerScape. The brochure highlights the visual impact of the systems' seven colors and soft neon-like glow. **Pentair Pool Products**, Sanford, NC.



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SCULPTURAL CERAMIC TILES

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CRAIG BRAGDY DESIGN has published a new 32-page booklet on its line of tiles. "Ceramic Works of Art" provides background on the U.K.-based company and its

production capabilities and then visits dozens of installations, including residential- and hotel-pool projects featuring the company's highly textured tile murals of tropical fish, coral reefs, porpoises and much more. **Craig Bragdy Design**, Tamarac, FL.

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WATER-EFFECTS BROCHURE

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CRYSTAL FOUNTAINS has published a "Fountain of Ideas" brochure on the eight waterfeature systems available in its WaterMark program for builders. The text covers crown and stream jets; laminar nozzles; and water-castle, spray-ring, mini-spout, jewel and foam jets and includes application photos, details, descriptive text and information on the program itself. **Crystal Fountains**, Concord, Ontario, Canada.



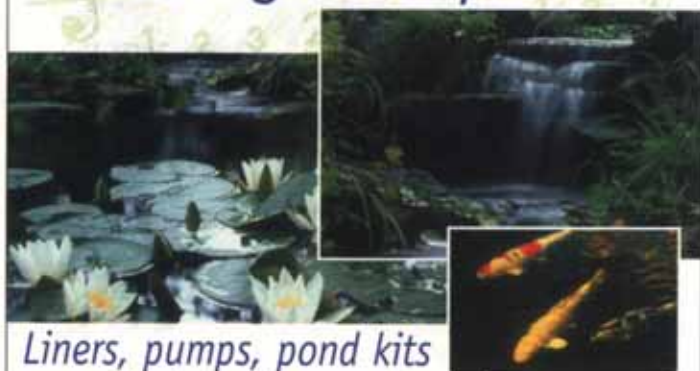
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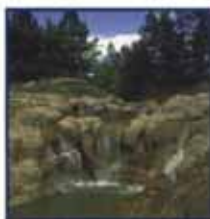
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POOL/SPA TILE

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PORTOBELLO has published a 24-page catalog on its lines of tile for pools, spas and other watershapes. Included is everything from monochrome tiles with subtle, depth-enhancing color and texture variations as well as a range of tiles inspired by classic Egyptian, Roman and Italian designs. The booklet also highlights the availability of bullnose tiles, quarter-rounds, beaks and more. **Portobello**, Anaheim, CA.

SOLAR POOL HEATING

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ENERSOL offers the S-1000 solar pool heater with roof-mounted panels that will not crack, rot, rust, corrode, chip or disintegrate. Backed by a limited 15-year warranty, the synthetic rubber in the absorber tubes can withstand vast temperature extremes and has a unique tubular design that exposes more surface area to the sun while also absorbing heat reflected from a hot roof below. **Enersol**, Campbellville, Ontario, Canada.

ENGINEERED-WOOD DECKING

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WEYERHAEUSER manufactures ChoiceDek Plus, a stable, engineered-wood decking product that never needs sealing or treating and is virtually waterproof and maintenance-free. Designed for beauty and durability, the subdued-gray decking comes with a range of accessories, including handrails, balusters, trims and post wraps. The 6-in. planks come in 8-, 10-, 12-, 14-, 16-, 18- and 20-ft. lengths. **Weyerhaeuser**, Santa Clarita, CA.

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FINISH-INSTALLATION VIDEOS

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SGM has produced a set of videos demonstrating proper installation techniques for its line of pool finishes. Designed to help plastering crews get the job done on time and on budget, the videos cover application of the company's Diamond Brite non-fading, polymerized quartz-aggregate finish; its River Rok exposed-aggregate system; and its polished Durazzo finish. **SGM**, Pompano Beach, FL.

AUTOMATIC CONTROLLERS

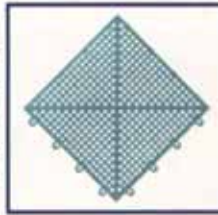
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ACU-TROL has added model AK-PPM-P to its line of devices for automatic and continuous monitoring and controlling of entire pump rooms for pools and spas. The new unit has a standpipe configuration and allows for plumbing into pressure systems while maintaining consistent flow. It also has a flow meter to verify flow rates and prevent sensor damage. **Acu-Trol**, Auburn, CA.

MODULAR FLOORING

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MATÉFLEX has introduced three products to meet the aesthetic and practical flooring needs of the pool and spa industry: SoftFlex, a flow-through drain tile, is designed for comfort and improved traction close to the water; CarpetFlex and TileFlex offer durability and versatility away from the water and feature a base construction that allows for airflow that keeps moisture away from the surface. **MatéFlex**, Utica, NY.

INSULATED POOL-WALL SYSTEM

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AUSSIE POOLS distributes the AquaKit system for building vinyl-liner or acrylic-plastered pools. The system uses insulated wall panels to form the shell of the pool or spa for greater heat retention and efficiency. Custom shapes are achieved with computer-guided cutting from blanks of expanded polystyrene foam, and more than 150 configurations already exist in the company's design database. **Aussie Pools**, Sacramento, CA.

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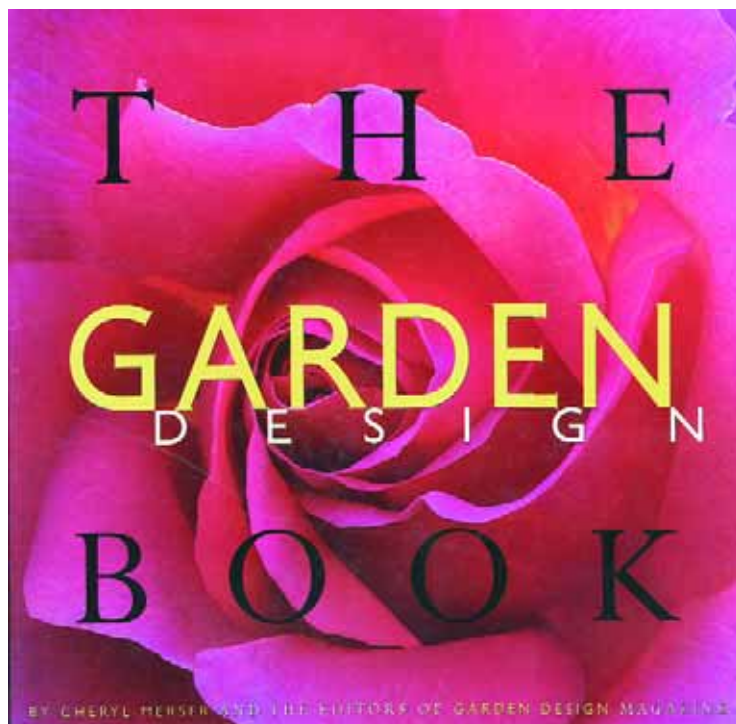


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Starting with Gardens

For watershapers looking to grow into broad, integrated exterior designs that extend beyond the water's edge, *The Garden Design Book* (compiled by Cheryl Merser and the editors of *Garden Design* magazine) is a great place to start.

Published by Harper-Collins in 1997, the book draws on years of articles published in the magazine, a wonderful publication for both amateur and professional gardeners. Throughout the book's 300+ beautifully illustrated pages, Merser and company offer a huge stock of valuable information for those in quest of *complete* environments.

Merser is not a designer, and one of the things I like most about the book is that she amasses and presents information without apparent stylistic bias. Instead, she covers a broad range of garden types in four major sections that illustrate and advocate basic garden-design principles.

The first section has to do with designing for the senses. I found this particularly refreshing because, too often, discussions of garden design are confined to the visual. Instead, Merser selects articles on designing for touch, smell, sound and taste that should be of particular interest to watershapers, given how interactive and dynamic water is across *all* the senses.

The second section covers a garden's major design elements (other than plantings). These include water, pathways, structures and boundaries – all of them critical to the framework of a garden. Different types and styles of structures (such as arbors, pergolas, gazebos and porches)

Merser is not a designer, and one of the things I like most about the book is that she amasses and presents information without apparent stylistic bias.

are also discussed in rich detail, along with options for incorporating them into designs.

This section also digs into garden ornaments, including birdbaths, sundials, urns and statuary – all with an eye toward integrating these elements into the complete garden design. It's just the kind of broad information that can inform and inspire watershapers who might tend to focus on a single element to begin to integrate their work into overall settings.

The third section is all about plants – a tough subject because plantings are so tied to climate and geography. To dodge that problem, Merser and staff looked instead at fundamental aesthetic issues of color and texture and at broad classifications, such as climbing vines or plants used for ground cover. For people who want to get into planting plans or simply have a greater understanding of garden flora, the book does a nice job of demonstrating how various types of plants can be combined in different ways.

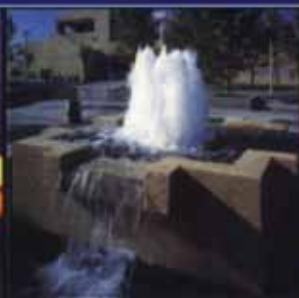
The fourth and final section of the book offers case studies across a range of garden types and styles – each one described in great detail with plan views and lots of photos. The range here is broad, from courtyard gardens to huge estates. A great feature here is the demonstration of ways to transition from one style to another within a single project.

For those who want the Big Picture on garden design, this book carries my highest recommendation. Two others come to mind as well: *The Book of Garden Design* by John Brookes (Doring Kindersley Ltd., 1991) is extremely useful in understanding more formal designs, while *Bold Romantic Gardens* by Wolfgang Oehme and James Van Sweden (Acropolis Books Ltd., 1990) offers vastly useful coverage of gardens in a range of styles. Although more than a decade old, these texts are both available on the Internet and in technical bookstores. **WS**

Mike Farley is a landscape architect with 20 years of experience and is currently a design/project manager for Leisure Living Pools of Frisco, Texas. He holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.

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