

Inside: David Tisherman on the Road

WATER SHAPES

Design • Engineering • Construction

Volume 5
Number 3
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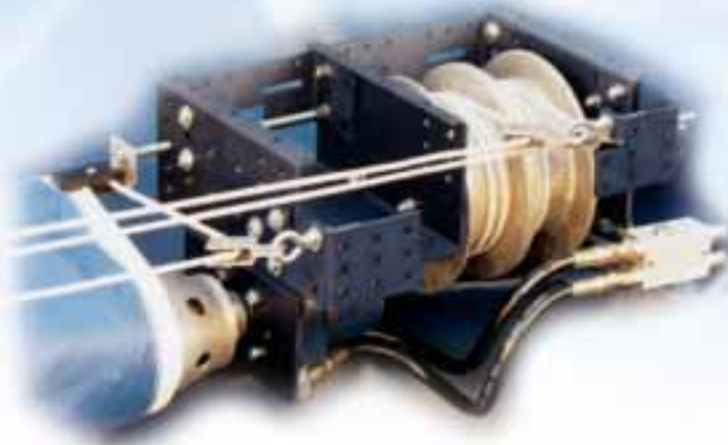
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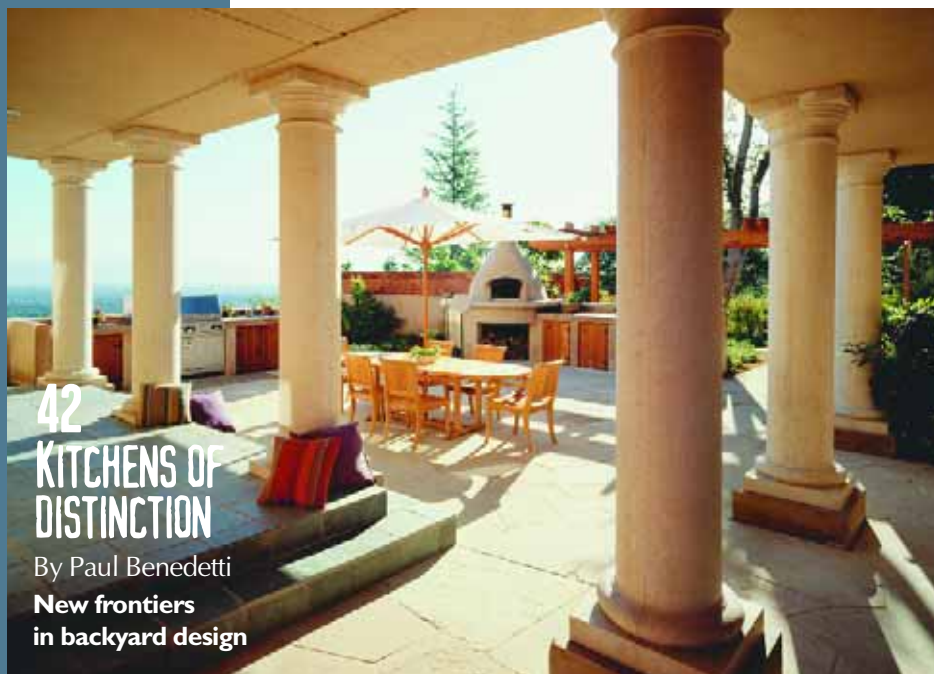
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On the cover:

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Recipes for Fun

I love the fact that more and more people I talk to are referring to the bodies of water they create as works of art. At their best, watershapes do indeed possess all the aesthetic potential of painting, sculpture and architecture – a point our contributing writers repeatedly make in different ways. What I find equally delightful and relevant to discussions of watershaping is the fact that this particular art form also is about fun – a feature that gives the special craft of watershaping a luster all its own.

Indeed, the “fun factor” is a simple point that cuts across all styles and designs: Whether we’re considering streams, fountains, spas or pools – commercial or residential, large or small – every watershape has the capacity to make people happy.

That, to me, is an inspiring notion. In a general sense, it confers a wonderfully positive spin to the work itself and is certainly something to hold onto as you go about your daily routines. And on a purely practical level, the fun involved in watershaping also spells opportunity in big, bold letters.

I can think of no better example of this kind of opportunity than the one reported by Paul Benedetti in “Kitchens of Distinction” (page 42). Paul builds custom, high-end pools for clients in California’s Silicon Valley. As part of his projects, he says, he often builds outdoor kitchen areas with varying combinations of amenities.

What I found striking is his claim that more than 90% of his clients are actively looking for the ability to cook and entertain outside – and that most of them want to be able to do it in close proximity to water. I’d regard his reports as a regional phenomenon were it not for the fact that I’ve heard pretty much the same thing from watershapers in other parts of the country – all of whom extol the great rewards that have come from adding kitchens to the watershaping menu.

That this is more than a passing trend is seen in the fact that appliance and fixture manufacturers are continuously expanding product lines designed for outdoor use. I look at it this way: Those manufacturers have huge vested interests in following consumers’ buying habits, and they certainly wouldn’t be producing outdoor grilles, refrigerators and faucets if they thought consumers were uninterested.

I occasionally have conversations with watershapers about ancillary profit centers, and I’ve always been surprised by how many of them are available to enterprising spirits. But this outdoor-kitchen business seems different to me somehow, because it’s not so much “ancillary” in the usual sense as it is an integrated part of what watershapers already do in organizing recreational spaces. And personally, as editor of this magazine and as one who has spent a lifetime attending pool-side barbecue parties, I can think of no better activity to conjoin with the mainline task of creating beautiful watershapes than working with outdoor kitchens.

The simple fact is that people who love recreational or decorative water enough to pay to have it installed behind or alongside their homes are very likely to enjoy entertaining or dining outdoors with family and friends. As Paul Benedetti points out eloquently, taking advantage of this basic fact means becoming educated about these amenities and their proper installation. In that sense, investing in the education process along these lines is really no different than any other key element of watershaping.

Ultimately, when you stop to consider what watershaping is really all about, taking kitchens outdoors is just a natural extension of the artistry – and one that will provide fun and enjoyment for your clients long after you’ve said your goodbyes.



WATERSHAPES

Editor

Eric Herman — 714.449-1996

Associate Editor

Melissa Anderson Burress — 818.715-9776

Contributing Editors

Brian Van Bower David Tisherman
Stephanie Rose Rick Anderson

Art Director

Rick Leddy

Production Manager

Robin Wilzbach — 818.783-3821

Circulation Manager

Simone Sanoian — 818.715-9776

Director, Marketing and Sales

Stephanie Behrens — 818.715-9776

National Sales Manager

Camma Barsily — 310.979-0335

National Sales Representative

Sherry Christiaens — 505.421-3100

Publisher

James McCloskey — 818.715-9776

Publishing Office

McCloskey Communications, Inc.
P.O. Box 306
Woodland Hills, CA 91365
Tel: 818.715-9776 • Fax: 818.715-9059
e-mail: main@watershapes.com
website: www.watershapes.com

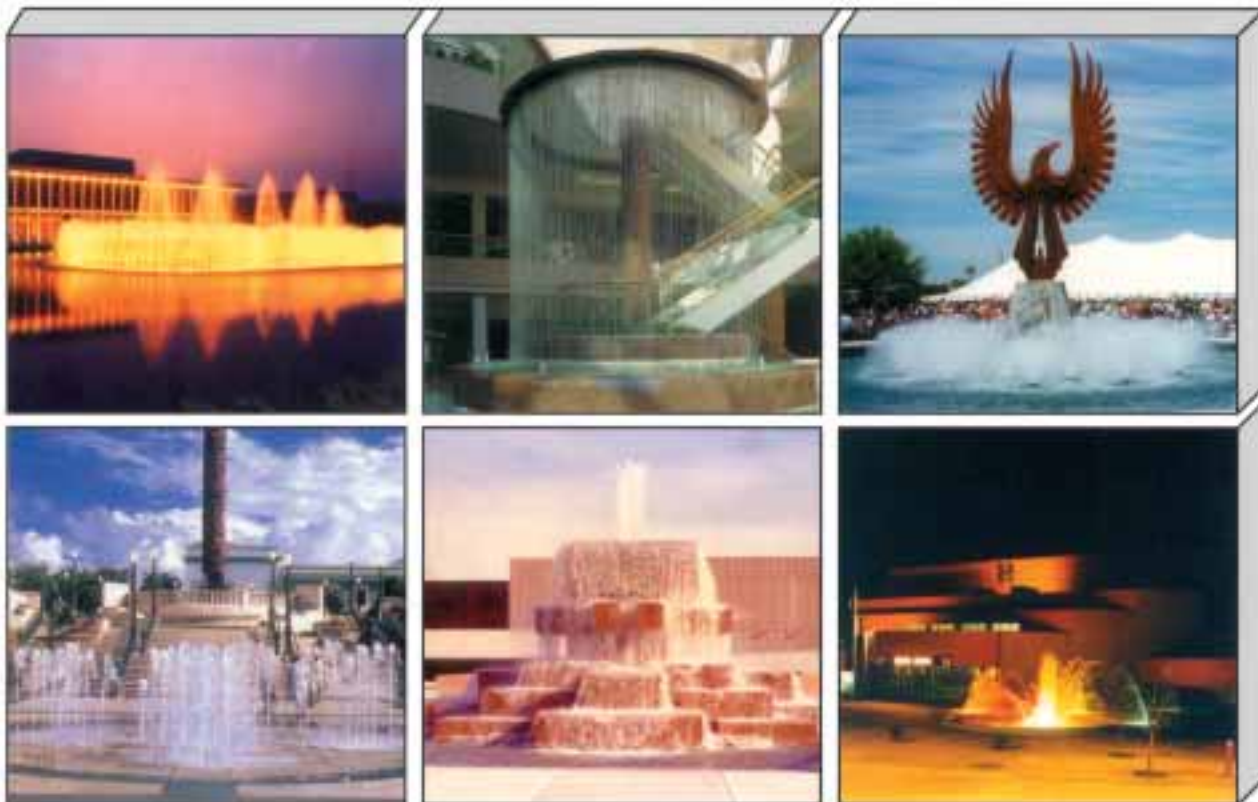
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Mike Fowler is business director of the Large Pool Systems for Pentair Pool Products in Sanford, N.C. He's been around the pool industry since he was nine years old, when his mother started working for a large pool contractor in southern California. After he graduated with a bachelor's degree in communications from Cal State University, Fullerton, in 1984, he worked for a handful of local pool contractors until 1991, when he was hired by equipment manufacturer Purex to work in its technical service department. When Purex was purchased by PacFab in 1994, Fowler moved over and became a marketing manager for the company in 1995.

When PacFab became Pentair in 2000, Fowler was named to his current role in managing the company's line of commercial and high-end residential filters, pumps and heaters.

Paul Benedetti is founder and vice president of Aquatic Technology, a custom swimming pool design/build/service firm based in Morgan Hill, Calif. He began his work in the industry in 1991 as an independent service technician. He quickly moved into major repair and remodeling work, eventually transitioning into original designs and construction. He now



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builds extremely high-end residential pools for upscale clients in Northern California's Silicon Valley region, where he also offers his design services to architects and landscape architects. Benedetti's firm continues to service pools, including all of those he has built. He is a member of the Independent Pool & Spa Service Association and the National Spa & Pool Institute and is an associate member of the Genesis 3 Design Group.

Bob Dews is founder and president of Extreme Ponds in Cashiers, N.C. His focus is on design-

ing and engineering watershapes that emulate the natural streams and cascades of the mountainous areas where he lives in western North Carolina, and he credits the abundance of these natural waterfeatures for his past and continuing education in the field. During the past several years, Dews has conducted seminars and written extensively in the pond industry to help educate the trade in the importance of "naturalizing" artificial water systems. When not designing and engineering his distinctive brand of watershapes in the Blue Ridge Mountains, Dews and his family operate a small motel they own in Cashiers.

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Much Ado About David

I understand the frustration Ken Simpson has with David Tisherman (see "Taking Offense," January 2003, page 12). Although Mr. Tisherman is a brilliant designer, he is also arrogant and arbitrary.

Mr. Simpson says that he takes great exception not only to Mr. Tisherman's attitude, but also with the choice of colors that he used on a recent project. I think we all know that colored plaster never holds a true color and that mottling will occur. If the homeowner is made aware of the problems that will occur with discolorations and still wants it, then of course it is the owner's responsibility. I would not fault any designer in his or her choice of colors. Some may be spectacular, while others may be just different.

The biggest problem I have with Mr. Simpson's letter is the last paragraph. All magazines have editorial rights and policies, but the last paragraph not only de-

grades the writer, but also the magazine.

Albert Rizzo, CSP, CBP
Rizzo Construction Pool Co.
Newington, Conn.

The Flip Side

I take issue with Ken Simpson's naïve evaluation of the skill level of the swimming pool industry and wholeheartedly disagree with his scathing attack on David Tisherman.

Clearly, Mr. Simpson is one who is comfortable with the status quo, so much so that it would appear he feels compelled to criticize those who would challenge it. I ask you: Can creative design and style be selected from a catalog, delivered on a truck, inflated by dad or drawn in 15 minutes at the kitchen table as Mr. Simpson would seem to suggest? I don't think so.

The art of design takes time, thought, research, and the careful evaluation of

client needs and lifestyles. As important, watershape design requires knowledge of materials science, art, color, texture, history, architecture, drawing and illustration, social dynamics, construction techniques, quality control, design tolerances and hydraulics. Mastery of these topics comes only through knowledge and experience, and the quest is never-ending. When a designer's learning has ceased, the resulting designs are doomed to stagnation.

I, for one, applaud Mr. Tisherman's provocative use of materials and colors—including the red plaster and Crayola tile that have given Mr. Simpson such grave offense.

Yes, David Tisherman is out on the leading edge, and his pools and materials may not fit the narrow categories to which Mr. Simpson would confine them, but Mr. Tisherman achieves his goals with each of his projects, creating

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objects of great style and beauty tailored to the desires of the clients who've commissioned them. The red-plaster pool, while not my own cup of tea, must be admired for what it is: a beautiful work of art. I applaud Mr. Tisherman for his design ambition and admire his clients for enabling him to move into uncharted territory.

For my part, I'm thankful to live in a country where freedom of thought and expression has allowed designers, inventors and dreamers to define their trades. We live in a place where people as different as Frank Lloyd Wright, John Lautner, Steven Spielberg, Alexander Graham Bell, Andy Warhol and, yes, David Tisherman have advanced culture and thought with their work and their daring. Most of them have been ostracized by their peers as being eccentric; only in later years has their genius and foresight been recognized.

Once more, I applaud Mr. Tisherman for the challenge he has thrown out to the

pool industry, and I am certainly not surprised by the shortsighted response coming from a self-revealed admirer of the status quo. There is a whole world out there, Mr. Simpson. Open your eyes and you'll be amazed.

Paul Benedetti
Aquatic Technology
Morgan Hill, Calif.

And more...

In response to Ken Simpson's January letter, I would like to raise my voice in praise of the designer he criticizes so bluntly.

Yes, David Tisherman has a high opinion of himself and of his work. What Mr. Simpson misses, however, is that Mr. Tisherman backs up his ego with remarkable attention to detail, quality control, design flair, knowledge of art and history and a complete intolerance for mediocrity. All of this carries his work into the realm of true excellence.

I've had the privilege of being one of Mr. Tisherman's students, and he has certainly helped me grow as a designer. In one session, he offered an open invitation to anyone in the class who wanted to call on him for advice. I took him up on the offer and went to visit him in southern California, where we toured several of his recent and ongoing projects. One of our stops was at the "red plaster pool," where I had the pleasure of speaking at some length with the homeowners. They were elated with Mr. Tisherman's creation because it so artfully reflected their own tastes and the style of their beautiful (and unusual) home.

Mr. Simpson seems to have forgotten that beauty is in the eye of the beholder and that the "value" of art is entirely subjective. Speaking for myself, however, I would rather aspire to create something both artistic and unique – as has Mr. Tisherman repeatedly during his career – instead of referring to the same bland pool template over and over again.

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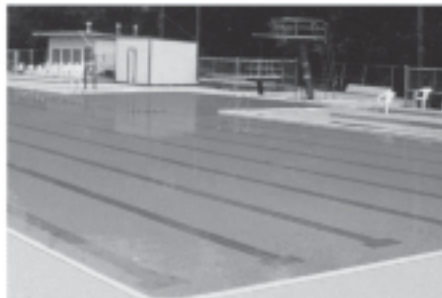


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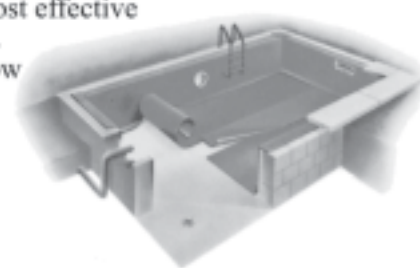


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LETTERS

I believe the pool and spa industry desperately needs pioneers like David Tisherman to bring it credibility and respect and thereby help us all achieve our true potential.

Christopher Lines
Creative Environments
Alamo, Calif.

And finally...

Why is Ken Simpson so mad at David Tisherman? Whatever his reasons were for taking such offense at the sight of red plaster and colorful tile, it would seem that Simpson doesn't realize that by attacking Tisherman with such hostility, he proves the point that there really are people in the pool industry who are hamstrung by convention and the past.

Perhaps we should take Mr. Simpson at his word when he says that he wishes to be left alone in the world as he sees it. After all, the reality of the pool and spa industry is that, for decades, the product has been degraded by a lack of ambition, imagination and creativity. Facing up to such facts is not always pleasant or comforting for those who've built their careers on compromises and mediocrity, but the truth is out there for all to see.

I mean, can Mr. Simpson *really* be mad at Mr. Tisherman because he builds pools for the rich and famous? Would any designer or builder turn down the chance to work for a celebrity simply because he or she doesn't want to seem elitist? Naked hypocrisy aside, I think Mr. Simpson is so angry because he feels exposed!

Ultimately, the fact that there are people in this business who are so uncomfortable with innovators like Mr. Tisherman is an ironic indication that we may finally, as a trade, be making some progress. To Mr. Simpson and others who take such offense at Mr. Tisherman's perceived arrogance and provocation, I say confront his challenge by striving for excellence in your own work. But in the future, please keep your fantasies about Anna Nicole's underwear to yourself!

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Warming to the Touch

Last time, we began a discussion of giving our clients the satisfying hot-water experience they crave with a review of basic design principles and coverage of a range of materials-selection issues.

Translating the good on-site positioning and great materials we surveyed in February into a luxurious spa experience requires the designer to have an advanced understanding of the technology at work in hydrotherapy as well as a grasp of the spectrum of options available to drive and control hot-water systems.

Before we address those key topics, however, it bears quick repeating that a spa's location, size, shape and finish materials – not to mention the overall ambiance of the setting – must be well in mind as you turn your attention to the more “interactive” elements of the design.

If we do our jobs correctly in setting up our spa systems with respect to interior seating configurations, hydrotherapy action and various control features, those who dip into the warm, bubbling, swirling water will never need to consider the expertise and effort required to orchestrate the experience.

Seats, Please

As I mentioned in my February column, the focus here is on custom, in-ground spas rather than those prefabricated units that are available for pur-

It's not unusual for me to take a client's physical measurements into account when designing seating depths and widths and in deciding the all-important matter of jet locations.

chase in retail stores. In most respects, the potential for creativity and beauty in custom designs dwarfs the comparatively limited range of aesthetic possibilities available with portable spas. After all, a portable spa is basically a plug-in appliance, where a quality inground spa should aspire to become an integrated component in a landscape and, one hopes, a work of art.

One area in which portables are often superior to spas built on site, however, has to do with seating configurations. I commend portable spa manufacturers for the creativity and care they've invested in making seating arrangements that maximize comfort and hydrotherapy action, and I sincerely believe that we custom designers and builders would do well to study the ways in which quality portables accommodate the human body.

In my own work, I've tried to create interiors in concrete vessels that have the same level of complexity and variety. Although I believe we can accomplish great things with concrete, in all honesty I've never been completely satisfied with the results we've obtained on our more complex seating designs. As we're reminded all too often, they can be extremely difficult to form and even tougher to finish.

That's not to say that we'll ever give up on concrete spas when it comes to outfitting them with comfortable seating and agreeable interior contours. Quite the contrary: We achieve a great deal with angled backs, varying bench depths, a variety of foot rests, attractive step designs and special features such as stand-up hydrotherapy wells.

That said, if I discover that my clients' needs with respect to interior seating simply *cannot* be achieved with a concrete shell, I'll seek out options among custom-made stainless steel or fiberglass shells. On a recent project, for example, I designed a custom recliner with the shape based loosely on a famous design by Le Corbusier. This

curved, two-person seat was made up of spaced stainless steel tubes, each approximately one inch in diameter, running lengthwise and attached at each end to a curved frame. The jets and air channel are beneath the tubes, and the whole lounge can be raised, lowered and tilted as the clients wish.

In all cases, in other words, I go to great lengths to accommodate my clients' specific spa-seating needs. In fact, it's not unusual for me to take a client's physical measurements into account when designing seating depths and widths and in deciding the all-important matter of jet locations.

Jet Sets

One of the most valuable lessons custom builders can learn from portable spa manufacturers is that hydrotherapy jets can be located anywhere in the spa, can be aimed at just about any part of the body and can provide a dizzying array of hydrotherapy effects.

Long gone are the days when all jets were set in a ring around that spa at the same level. Now we set things up with jets that work bathers over from head to toe, from the neck and the upper, middle and lower back to the calf muscles and the feet.

These systems can be set up on different plumbing loops and valved independently so the bather has the option of activating different sets of jets in varying combinations and intensities. We can create lounge areas that virtually lift the client off the seat by providing intensive hydrotherapy action from stem to stern – or we can set up wells in which sequenced jets roll up and down the body.

Another admirable feature of some portable spas is easy change-out of individual jets or, in some cases, the use of snap-in panels that contain multi-jet arrays. Indeed, today's market is full of all sorts of gadgets and gizmos that can truly excite our clients, from jet nozzles that provide multiple hydrotherapy effects in one device to tiny jets that provide extremely light sensations – or big exercise jets that can be adjusted to provide varying levels of resistance for in-place swimming or water walking.

All you have to do these days is check out the catalogs of spa-jet manufactur-

ers to see that the sky really is the limit when it comes to product options. But be advised: The mere fact that a product is easy to get doesn't mean that *using* it effectively is necessarily easy. All of this flexibility and wide range of possibilities burdens the designer with knowing how to set up the hydraulic and pneumatic systems that run them.

Again, portable spa manufacturers put a great deal of effort into designing balanced hydraulic and air systems that support the promised hydrotherapy action – and once they get it right, they can repeat the same configurations over and over again. Custom designers and builders can't take advantage of that production mentality, so we pretty much start from



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scratch each time.

If shortcuts are taken, whether it's with an inground spa attached to a swimming pool or with a portable, the lack of careful hydraulic engineering leads to poor performance and a range of problems from uneven jet action at different spots around the spa to unsafe operating conditions (in extreme cases).

Don't ever hesitate to seek expert advice or guidance: It's in the best interests of the companies that make jets for use in custom spas to make certain they're being used in the right way and with the best possible results, and most of them are more than willing to pitch in and make certain you're on the right track.

The importance of setting up balanced

plumbing loops to supply spa jets, of proper sizing of nozzles and orifices and of understanding flow and pressure requirements cannot be overstated. After all, once you install the plumbing and shoot the spa with concrete, you're married to whatever engineering you applied to the design process!

Water Treatment

What is true for pools is even more so for spas: Chemical water-treatment systems and proper filtration are absolutely essential.

There are several factors in play here. For starters, the volume of water in most spas is quite small with respect to bather load when compared to conditions found in swimming pools, for example. As a result, spa systems tend to be far less chemically stable, and water quality can deteriorate rapidly in a poorly equipped system.

In addition, the warm water temperatures cause bathers to sweat more than they would in a swimming pool and open the pores to release who knows what into the water, which further puts a strain on the system. These elevated temperatures can also cause bacteria to develop more rapidly if the system is not adequately sanitized.

In my spa projects, I always upsize my filters – for two good reasons: First, they are more hydraulically efficient, which can be crucial in systems that rely on balanced hydraulics for proper jet operation. Second, larger filters do a better job in capturing dirt and oils that can aggravate water-quality problems.

Water chemistry isn't a regular topic in this magazine, but for spas I'd say it's as much a design or engineering issue as it is a maintenance issue. By that I mean that decisions I make in the design stage about how the water will be treated are critical – and there are a variety of options to consider. Ozone generators, saltwater chlorine generators and chlorine or bromine feeders are all wonderful devices that can take a great deal of the worry out of spa maintenance later on.

Personally, I prefer to equip spas with ozone- or chlorine-generating systems. Either of these provides extremely high quality water without the odors and oth-

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er negatives associated with some other forms of water treatment. Salt-water systems in particular work out well for spas because the slightly saline condition they instill makes the water take on a noticeably soft, silky texture that enhances the sensations of the hot-water experience.

Heating is another big issue for spas. As I mentioned last time, oversized spas can be a real problem when designed and engineered improperly if for no other reason than these big bodies of water can take a long time to reach the desired temperature, chewing up valuable Btus in the process. I guarantee you that no other issue related to a spa will aggravate clients more than having to wait around for the water to get hot.

That's why we never cut corners when it comes to spa heating. I always urge clients to invest in an upsized heater to ensure quick heat up times, at which point making a selection is a straight numerical calculation involving water volume and heater size. Beyond that, heating efficiency is the main issue, and this is where

regional distinctions come into play. For example, heat pumps can be wonderful in warm climates where rapid heat-up is not a big challenge or when a constant warm temperature is desired, while in colder climates, gas or propane heaters may be the preferred choice.

Options Checklist

The list of additional options that can be included in today's spas is so lengthy and diverse — too extensive for detailed coverage here. So let's take a quick tour of some of the *other* things I discuss with my clients:

► **Controls:** Modern control systems range from simple spa-side push buttons to multiple-function, programmable, low-voltage controls. The most capable ones will enable your clients to operate varying combinations of jets, set system start-up times and temperatures, control the system from a variety of remote locations (and even via telephone) and manipulate a range of associated

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amenities, including lights, misters and other features.

► **Spa covers:** Insulated covers on spas offer a set of attractive benefits. Their primary purpose is to prevent heat loss between uses: Any heat that's retained by the cover reduces the time and cost required to kick the water temperature back up to the desired level. In addition, covers reduce the amount of debris that can fall into the water, which in a small spa can mean the difference between clarity and cloudiness. Finally, *lockable* spa cov-

ers are an effective safety device.

► **Bubblers:** Not be confused with hydrotherapy jets that entrain air and move it forcefully, bubblers do nothing more than add bubbles to the water for purely aesthetic purposes. Typically, bubblers consist of a channel installed in the floor or seat that feeds air to a series of small

holes in the spa's finish. A few people still claim that these bubbles offer some hydrotherapeutic value, but it's pretty much agreed that their appeal is primarily visual.

If my clients want bubbles, I'm more than happy to install a system for them. When I do, I also explain to them that there can be some drawbacks to bubblers,

Blowing It

There's something of a debate among those who design custom, in-ground spas about the role of air blowers and booster pumps.

To be sure, a spa's air-entraining system is of critical importance to the performance of a spa's jets. Air drawn by Venturi-style injector systems add considerably to hydrotherapeutic action and have long been a staple in the hot-water business.

If a designer or builder has a tendency to deal with air-system issues later rather than sooner, there's always the possibility of adding a blower or booster pump to juice the jet action. As someone who takes pride in his hydraulic designs and in this case has spent time thinking about pneumatic issues as well, I'd argue that blowers and booster pumps shouldn't be necessary and are basically there to mask poor system design.

These additions work, but all you're really doing is slapping on an energy-wasting, inefficient, secondary system that will never be as satisfying to the customer as a properly designed primary system. Venturis are wonderful devices that use basic physics to get the job done – but you need to plumb them correctly or they won't work well (or at all).

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particularly when the system is first activated and the air coming out of the bubbler's channel is considerably cooler than the surrounding water – a problem that can cause discomfort and even minor pain for some bathers.

► **Associated waterfeatures:** As with swimming pools, this is an area of

tremendous expansion in spa design. Basically, any waterfall, cascade or fountain effect you can design into a pool can be applied just as well to a spa. One of my favorites: large, warm waterfalls that tumble into spas and can be designed with flows sufficient to provide spectacularly vigorous massage action for the neck and shoulders.

I also admire designs in which the spa itself takes on the character of a separate waterfeature. You see this effect with perimeter overflow spas, for example. These water-in-transit systems are also praiseworthy from a safety standpoint, because when the water spills over the edge and into a catch basin, all of the system's suction points can be removed from the spa's interior.

► **Misters:** These systems seem to be growing in popularity lately for use with spas. When installed in overhead structures, they add cooling mist to an otherwise warm environment – a function they ably perform whether the spa is in use or not. These are simple, inexpensive systems, and where I've used them, my clients really enjoy the contrast they provide for the hot-water experience.

► **Fragrances:** Some are still dismissive, but aromatherapy has definitely found its way onto the hot-water scene. These days, you can add systems to spas that inject fragrances directly into the water. Although I get uncomfortable with the New Age trappings of all this, I have worked with customers for whom pleasant-smelling water has been a high priority.

In addition to this list, there are other options to be considered, including lighting systems, sound systems and a range of exotic hydrotherapy designs of the sort many of my clients have encountered in resorts and on cruise ships. All of this goes to show just how far-reaching the process of custom-designing a spa can and should be – and how great is the responsibility we all have to know what's available and how it can be used to the best and most pleasurable effect. **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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The Dirt On Soil

Watershapers are still fairly easily divided into two groups, one with its origins in the landscape trades, the other coming from the pool industry.

For all the distinctions that might be drawn between them, however, watershapers of all stripes have one very important thing in common: We all work with the stuff we find under our feet on the job site – the stuff we generally call dirt or soil.

Dirt is the more inclusive of the two terms, and unless the contractor is working with a tricky site or faces compaction issues, it is simply what is carted away or rearranged to make room for a watershape. By contrast, *soil* is a blanket term covering a variety of specific types, and knowing what they are and how to work with them is an essential landscaping skill.

Let's take a look at why all watershapers should think *soil* rather than *dirt*.

The Stuff of Life

For starters, the makeup of the soil in any garden is critical to its survival.

If you're lucky enough to get a client who has a yard filled with loam, you can plant away without thinking too much about which soil amendments you'll need to add to your budget.

Soils that allow water, nutrients and other organic material to penetrate and be absorbed through a plant's root system will sustain plant life more easily than those without these characteristics. Before launching into any landscape design, it is therefore important to assess the soil composition to determine whether or not you need to adjust the plant list accordingly.

Soil is made up of mineral particles that determine its texture and, thus, its type. It contains some combination of clay, silt and fine, medium and coarse sand, with the proportions of these materials making soils fall into three main types:

► **Clay:** This is the densest type and has a greater percentage of clay and less sand and silt than other soils. It holds water the longest and has the ability to hold nutrients longer than other soils, so plants desiring moister environments thrive in it. When saturated, clay soil becomes heavy, dense and mucky – the kind of goop that will rip a work boot right off your foot if it's not laced up tight!

► **Sandy:** This is the lightest soil and has a large sand component with very little clay, allowing greater drainage and less water retention. Plants that thrive in arid conditions do very well in this soil.

► **Loam:** This is a balanced soil, somewhere between clay and sandy, with fairly even proportions of all the various mineral particles. As such, it blends the best properties of clay and sandy soils, draining better than clay but not drying out as fast as sandy soil. If the soil is loam, you have a greater chance for success with your planting.

So what do you do with the soil you've been dealt? The first step is working with your clients to determine the type of plants they want.

If you're lucky enough to get a client who has a yard filled with loam, you can plant away without thinking too much about which soil amendments you'll need to add to your budget. But if, for example, your client wants a xeriscape (a selection of drought-tolerant plants that thrive in sandy conditions) and you have a heavy clay soil to work with, you'll have your work cut out for you in making the

extreme transition from clay to sandy soil. At a minimum, this means rototilling sand and amendments in to lighten the soil.

In amending soils, you must also consider that amendments are temporary. They may alter the soil's composition for an extended period of time, but they will never permanently change the soil from one type to another. For the most part, you'll do best if you work with the soil as you find it and tailor your design and plants to its characteristics rather than trying to force the situation.

Testing the Soil

I've never been an advocate of using expensive tests to determine soil composition. I think they're generally unnecessary and actually a bit of overkill, except in cases where an extremely expensive planting is taking place or rare specimens are being grown or where a client with appropriate irrigation and maintenance has been unable to sustain a planting.

(It's important to note here that I'm talking about testing surface soils for planting suitability – not the sort of deeper, geological testing you need to conduct before putting large concrete and steel structures in a backyard. They're both called "soils testing," but they're two entirely different things!)

I generally avoid soils testing because there are inexpensive and perfectly adequate ways to look at a soil's texture and use it to determine basic composition and type.

The *Sunset Western Garden Book* suggests one method in its 2001 edition: "Thoroughly wet a patch of soil, then let it dry out for a day. Now pick up a handful of soil and squeeze it firmly in your fist. If it forms a tight ball and has a slippery feel, it's predominantly clay. If it feels gritty and doesn't hold its shape at all but simply crumbles apart when you open your hand, it's sandy. If it is slightly crumbly but still holds a loose ball, it's closer to loam."

Once you've established the texture and type of the soil you're working with, next comes its structure – that is, the way soil binds together to form small clumps.

As previously stated, you can change

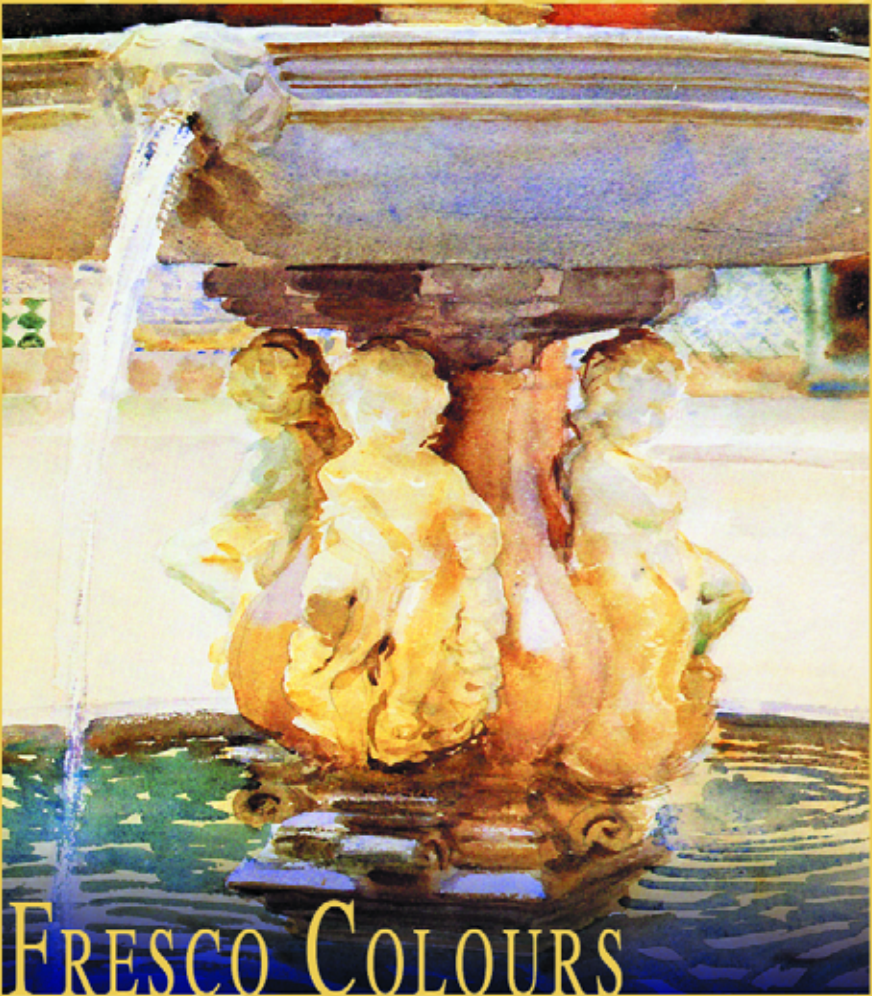
the structure (at least temporarily) by adding soil amendments. Few landscape designers and architects are experts in this subject, and I know well enough when I get into these areas that consulting with a landscape contractor or another local soils expert is a good idea and cuts the guesswork out of determining which amendments are most appropriate for a

given plot of land.

Testing soil for pH is also an inexpensive way to learn a lot about a specific patch of soil. I often resort to it in situations in which a client has had difficulty establishing a planting. A pH of 7 is neutral, while below 7 is acid and above 7 is alkaline. The pH of the soil can affect its ability to allow certain nutrients to be

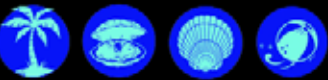
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available to the plants.

Where acidic soil is present, experts usually recommend adding lime to raise the pH. In alkaline soils, some suggest adding sulfur. No matter the soil texture or type, a soils-specific pH test kit can be invaluable, and there are even cases with certain plantings where calling on a laboratory to conduct these

tests can be a good idea.

Some plants, including azaleas, rhododendrons and camellias prefer a more acidic soil, and they are so popular and so widely used that you can easily find fertilizers and amendments made specifically to adjust soil pH to meet their needs.

And if you have any doubt that pH

makes a difference, just consider hydrangeas: The flowers change color based on the soil pH, with blue flowers produced under strongly acidic conditions and pinks and reds appearing where pH is higher. There are amendments specifically designed to help gardeners produce these colors. (I may be in the minority in preferring to let nature take its course.)

Amending the Soil

As I mentioned above, I generally defer to my landscape contractor or another expert on local soils for advice and installation when it comes time to amend the soil. If you want to tackle this part of the project on your own and need to have your questions answered or your approach endorsed, wholesale nurseries or garden centers are generally good sources of information and advice.

The choices are limitless when it comes to amendments. Soil can be altered chemically or organically, with everything from store-bought amendments to homemade composts and "teas." There are also great sites on the Internet that explain composting using leaves and organic materials from your yard as well as the use of worms and kitchen scraps. Many cities have non-profit organizations that seek to enhance the earth and the environment by teaching people about their plants and how to tailor the soil to their needs.

Once it is properly amended, proper fertilizing lends the soil a hand in sustaining plant life by periodically reintroducing nutrients that have leached out over time. That's the topic we'll discuss next time. **WS**

Stephanie Rose runs Stephanie Rose Landscape Design in Encino, Calif. A specialist in residential garden design, her projects often include collaboration with custom pool builders. 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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Crossroads of Culture

I spent ten days this last December traveling in Turkey – my second visit to the country in the past several years and a trip that reinforced vivid memories of just how mind-expanding a place it is.

The Greek, Roman, Byzantine and Ottoman empires all held sway over this historic land at times during the past 2,500 years, and throughout that long history, these and other great civilizations of both East and West have made their marks on the place. Situated at the crossroads of land- and sea-trade routes between Europe and Asia, Turkey has vast, rich reserves to draw upon when it comes to art, architecture, history, crafts, music, religion and cuisine.

Of all the exotic places I've been fortunate enough to visit, I can honestly say that Turkey is the most surprising of them all – and among the most historically significant and fascinating places on the planet.

From my perspective as a watershaper, I saw the whole country unfold as an endless gallery of design modes, motifs, ideas and traditions. I saw some of the world's oldest and most spectacular water systems – many of them still functional even thousands of years later. Ancient cisterns, Roman aqueducts, public bath-houses and spas, decorative fountains, reflecting pools, managed rivers and more are strewn among an array of ancient ruins, historic settings and modern streets.

It's no exaggeration to say you could spend a lifetime exploring the region and

Every single day, I confirmed my belief in the value of education – and specifically in the sort of education you gain from travel.

never see everything you'd want to see.

Across the Ages

On my recent trip, I had the privilege and pleasure of traveling with an extremely knowledgeable tour guide named Atakan Acar – without a doubt one of the most professional people I've ever worked with in the travel and tourism industry. His level of insight into the history that lurks around every corner of Asia Minor was invaluable as we made our way from our starting place in Istanbul, traveled to the cities of Izmir, Sardis, Pergamon, Didyma and Troy and lingered in churches, mosques, museums, parks and plazas along the way.

Every single day, I confirmed my belief in the value of education – and specifically in the sort of education you gain from travel. Every day, I was reminded as well of the resistance so many pool and spa designers have to looking to and learning from what great designers have done through the annals of time.

I kept tripping, for example, over the notion of "Grecian-style" pools as we know them in the United States. These are typically rectangular vessels with semicircular details at the ends, or sometimes they are pools decorated with simple columns or perhaps some statuary. When you examine the amazing variety of Hellenistic architecture found in Turkey, however, you begin to understand just how limited our perspectives and frames of reference really are – even among the more educated members of the watershaping community.

I've long harbored the thought that we

in the United States have the sense that we pretty much invented the wheel when it comes to pools and spas, but when you go to Pergamon, for example, and see the world's first known hot-water spa, wonderful mosaic-tile floors, spectacular columns and fantastic natural materials – and absorb the fact that these things have all stood there for millennia – it becomes apparent that, for all of our accomplishments, we are neophytes tracing the footsteps of great craftspeople of long ago.

When we think of them at all, for example, we in America tend to categorize classical column forms as being Doric, Ionic, Corinthian or Composite, depending upon the style of their capitals. In Turkey, however, you'll see literally dozens of variations on each of these standard visual themes. And you see these variations everywhere, from the support structures of ancient buildings and aqueducts to the towers and minarets that top large public buildings and mosques.

Old-World Water

Vivid colors, expressive natural materials and religious/cultural symbolism are omnipresent in both interior and exterior designs throughout Turkey – and so is water.

Over and over, I saw evidence of this in the way ancient as well as more modern cultures have contained, used and controlled water. I visited drainage and sewer systems that



Taken in their original context, the pools designed and built by the ancient Greeks have a much richer and more integrated vocabulary than do most of the modern, "Grecian-style" counterparts being installed today.



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have functioned for thousands of years, for instance. I also saw big, impressive fountains run by gravity-feed systems that have served decorative purposes for centuries while simultaneously (and more importantly) cooling today's masses when the weather is hot.


I was particularly impressed by the soaring arches of Roman-era aqueducts. They're still found throughout the region – fully intact and looming overhead and seeming contemporary rather than relics of an ancient past. I also found, beneath a basilica in Istanbul, a cistern that had been built in 532 AD – and that still holds water. In Didyma, I saw reflecting ponds built hundreds of years ago that also still hold water and continue to reflect the surrounding greenery and architecture.

To be sure, we in our time and place see water used for ceremonial purposes in churches and mosques. We see water used for purely aesthetic reasons where streets and thoroughfares are cantilevered over large man-made streams. But to encounter these watershapes 500 or 1,000 or even 2,500 years after their construction is truly remarkable – as in Sardis, where I saw a beautiful urn fountain with delicate mosaic-tile floors that are still colorful and beautiful after thousands of years.

In our work, we sometimes think of improving the appearance of a structure by veneering it with natural or synthetic materials. In Turkey, entire ancient cities are veneered




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in spectacular limestone and marbles, with awesome carved figures and tile inlays throughout. These are remarkable works of art that have endured for centuries – and even as one who takes a tremendous amount of pride in doing quality work, I have to admit that these artists, designers and craftspeople possessed passion, knowledge and skill that makes my own work seem not quite so significant as I might like.

In other words, you could say that my recent experience was quite humbling at the same time it was incredibly inspiring.

Beyond the Pools

The sorts of ideas and influences to be collected on this type of journey can affect the open-minded traveler on many levels.

On the most basic and immediate level, Turkey is a beautiful country filled with warm and welcoming people. In design terms, however, the influences are virtually endless with respect to shapes, textures, colors and styles. I took hundreds of photographs as I made my way from place to place, and I'm certain I'll be referring to those images as a source for inspiration and specific design details for years to come.

The way I see it, this trip was an investment in my professional education. Further, it's education of a sort that has at least as much importance as the kind of formal education to



For those familiar with the classical orders, the sight of this column capital – not Doric, Ionic or Corinthian – is a challenge to convention of the sort found in temples scattered all around Asia Minor.

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DETAIL 25

be gained through a college or university. Actually seeing these settings and artifacts, up close with your own eyes, opens your mind to the riches of history and to an even deeper appreciation of our cultural heritage.

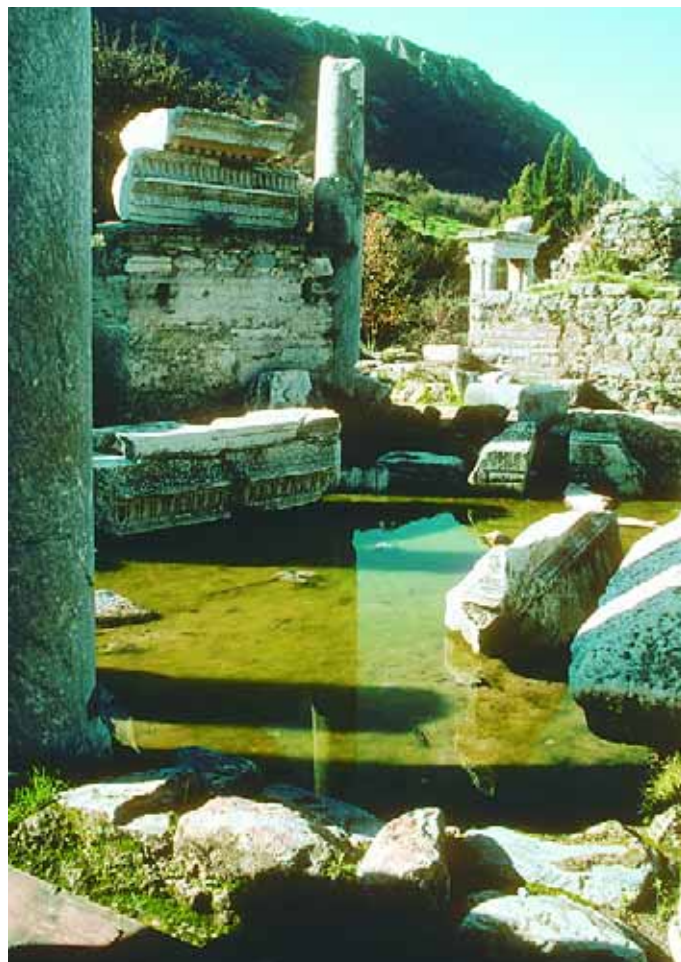
That heritage, in my book, is something taken too much for granted on a continent where history reaches back just a relative handful of years. Travel in ancient places yields not only knowledge that you can use in your professional life, but also builds a basic cultural literacy that will enrich you in ways that are not entirely definable or predictable.

A dramatic example of this sort of deeper awareness hit me right between the eyes at the Temple of Apollo in the city of Didyma. At the base of a fantastic set of Ionic columns, I was shocked to see what appeared to be swastikas. My guide informed me that this ancient symbol, grossly corrupted through its abuse in the 20th Century, was used by the ancient Greeks and others to suggest natural motion such as the meanderings of rivers

across rocky terrain – particularly appropriate in Didyma, which is located near the banks of the Meander River.

On a more benevolent level, I saw over and over again how architecture is infused with religious imagery. An example is the meaning of the common spider-and-pigeon icons of the Muslim faith, a motif found quite often in the ornamentation of mosques and other buildings. I learned that the spider and pigeon became important when the prophet Mohammed hid in a cave while fleeing persecution: His presence there was concealed by a spider who wove a web at the mouth of the cave and a pigeon who sat just behind the web. When Mohammed's pursuers saw the bird behind the undisturbed web, they assumed that no one had recently entered the cave and moved on.

Not all the visual metaphors were so literal. I learned, for example, how color has been used throughout the centuries to signify certain aspects of religious life, with the soft greens I admired so much



Even today, fantastically old reflecting pools faithfully perform their intended function when the rain cooperates – an intimidating legacy for the modern watershaper.

in mosques being used to signify heaven, the whites to represent virtues and godliness and the reds to represent royalty.

A Continuing Voyage

I suppose you could dismiss a good bit of what I'm saying here as the impassioned ramblings of someone who's just returned from a wonderful vacation with a big pile of slides.

On a certain level, you'd be right, because I did have a great time. But when I think about the importance of understanding the specifics of art history when it comes to any honest-to-goodness design education, I can't help believing that this sort of experience is the foundation of what we do and the legitimate core of our educational endeavors.

In other words, you simply cannot fully understand or appreciate the value of this sort of experience unless you go and experience it yourself. This was the motivation behind a planned Genesis 3 trip to Turkey in 1999 that was cancelled because a series of major earthquakes forced the temporary closure of many architectural treasures – and will, I'm certain, lead to a revival of the idea in the near future.

In the meantime, I'm preparing a pictorial on my recent trip that will run in an upcoming issue of *WaterShapes* – an article that will, I'm certain, expand considerably on topics and images seen here.

If your desire is, as mine is, to create beautiful, well-designed, well-constructed watershapes, then I cannot recommend in strong enough terms the value of visiting these amazing cities at the crossroads of East and West. Even if your desire is simply to become an educated, well-traveled, well-rounded person, then this type of exploration will serve you very well indeed.

For my part, I'm humbled by what I saw in Turkey – and can't wait to discover even more the next time I return. **WS**

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.

The advertisement for Arcadian garden features is set against a dark green background with a curved yellow border at the top. The company name 'Arcadian' is written in a large, white, serif font, with 'garden features limited' in a smaller, white, sans-serif font below it. The text 'Affordable • Stylish • Easy-to-Install' is in a white, sans-serif font, followed by 'New Range of Contemporary Water Features'. Below this, it says 'Full colour folder available'. The contact information for Haddonstone (USA) Limited is listed: '201 Heller Place, Bellmawr NJ 08031', 'Tel: (856) 931 7011', 'Fax: (856) 931 0040', 'www.arcadiangf.com', and 'haddon@aol.com'. On the right side, there is a photograph of a modern garden water feature with a large, orange, egg-shaped sculpture and a blue, circular, textured water feature. At the bottom right of the photo, it says 'Timeless designs for today's gardens'.

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The advertisement for PoolFog features a black and white photograph of a modern building with a large, curved roof and a stone chimney. In the foreground, there is a pool of water with a large, striped, cylindrical object floating in it. The text 'Create your environment.' is in a bold, sans-serif font, followed by 'PoolFog™' in a larger, bold, sans-serif font. At the bottom, it says 'Complete systems from \$1500.' and 'toll free 866-POOLFOG • www.poolfog.com'.

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Helping

It was a rainy Wednesday morning in January when I first toured the Clearwater Marine Aquarium. I was on hand to inspect the recent installation of a pair of our horizontal sand filters for the facility's marine-mammal pool and to see just how well the pool-filtration products were faring in this somewhat unusual (but not unheard of) application.

Located on Island Estates in Clearwater, Fla., the aquarium was bustling with activity from the moment the doors opened at 9 a.m. On this day, a group of pre-school children had arrived to see the aquarium's newest dolphin, Presley, and his friend, Panama. The staff also explained to me that the aquarium, like other indoor attractions, is always busier when the rain falls. I joined right in with the crowd, fascinated by everything I was seeing.

My guide, the aquarium's director of life support and marine facilities, Bill Meier, led me to the marine mammal pool – currently home to Presley and Panama but with the capacity to hold several more. This was the vessel on which my company, Pentair Pool Products of Sanford, N.C., had installed the sand filters. As I watched the children's faces as they in turn watched the dolphins, I began to realize that we were involved in something truly special.

Key Improvements

Part of my responsibility as business director for Pentair's large pool systems is to visit designers and builders across the country to gain a better understanding of how our products are being used to meet client needs and expectations. I've been in the pool business for nearly two decades and I've seen the company's products used in everything from country clubs and apartment complexes to hotels, waterparks and health

By
Mike
Fowler

Habitats

Clean, clear water is crucial for most watershapes, but when the vessel's purpose is to house and nurture rescued and injured marine animals, says Pentair's Mike Fowler, the need for top-quality water is even greater. Here, he describes how his company's pool filters came to be used at an animal rehabilitation facility in Florida, where they now ensure that dolphins, sea turtles and more are nursed back to health and trained in crystalline water.



Photos by Marc Vaughn, Marc Vaughn Photography, Hollywood, Fla.

The tanks on which the renovated filtration system has been placed now serve as home to two dolphins, but everything is sized to accommodate several more as needs arise. Some of the animals are to be rehabilitated and released, but others, including Panama (shown here), have been classified by the experts as “un-releasable.”

facilities, but this was certainly one of the most impressive, important installations I’ve ever seen.

We’d been called upon in one of many phases of a facility-wide renovation project intended to make the Clearwater Marine Aquarium a world-class institution. The “filter project,” as the aquarium staff called it, was about redesigning the pump-and-filter system on the dolphin pool and making the vessel more useful in furthering the aquarium’s mission of providing more educational opportunities, more exhibits and better habitats for the aquarium’s permanent residents and animals in rehabilitation.

From the outset, it motivated us that the dolphin pool is one of the most popular of all the aquarium’s attractions, and we’ve been pleased to deliver a system that has enriched the habitat through a significant upgrading of the filter system – an improvement needed to ensure a safe and nurturing habitat for multiple dolphins.

Overall, the aquarium’s renovation project is the subject of an ongoing, \$3 million fundraising drive and is scheduled to unfold gradually during the next five years. By the time everything’s finished, the dolphin pool will be joined by a coral reef and shark habitat, a rescue complex, a cypress swamp exhibit, renovation of the sea turtle habitat and a new, interactive snorkeling area that will allow visitors to swim with aquarium residents.

As my own tour unfolded, I learned more and more about the history and current activities of the aquarium and was inspired by the fact that Pentair was playing a small but significant part in one of the most ambitious aquarium-expansion programs anywhere in the United States in recent years.

Sea Shepherds

Since its incorporation in 1972, the Clearwater Marine Aquarium has been a valuable asset for sea animals as well as the residents of the Tampa Bay area. In fact, the non-profit, working aquarium is dedicated to public education as well as to marine research, assisted animal therapy and the rescue, rehabilitation and release of sick or injured marine animals. (For more background, see the sidebar on page 38.)



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Proud History

Each year, approximately 100,000 people from around the world come to the Clearwater Marine Aquarium to learn about dolphins, sea turtles, otters and other wonders of the sea – a success story that began in 1972 with a handful of volunteers.

A big break came in 1978, when the city agreed to lease an abandoned waste-treatment plant on Island Estates to the fledgling aquarium project. Renovations were begun, and by 1979 the first classroom had opened. Soon, volunteers built a pontoon boat to gather specimens and conduct field trips for the marine biology classes. Little by little, the cement and steel building was modified as an aquarium and, in 1980, was granted a permit to build 65,000 gallon tanks for the rehabilitation of dolphins, whales and sea turtles. By 1981, the first exhibit room was open to the public.

Through the next few years, individual and corporate donations began following the immense volunteer efforts, and the aquarium grew steadily. Many animals were cared for, and in 1984 an Atlantic bottlenose dolphin named Sunset Sam was rescued and given a permanent home at the center. (He passed away in December 2001.) By the 1990s, several dolphins had been rehabilitated and successfully released into the wild, and the aquarium's sea turtle nesting program and beach renourishment studies also enjoyed great success.

Today, with 20 full-time employees and more than 200 volunteers, Clearwater Marine Aquarium is home to many marine animals rescued, rehabilitated and (in many cases) eventually released by the facility's Stranding Response Team, the most successful in the nation.

—M.F.

During my tour, I learned that Panama had lived in the wild until she'd beached herself in Panama City, Fla., in 2000. At the time, she was severely underweight, dehydrated and seriously sun burnt. Further examination showed that her teeth were extremely worn down, a fact that would have made it difficult for her to catch fish in the wild and that led the National Marine Fisheries Services to declare her "un-releasable." Since her 2001 transfer to Clearwater Marine Aquarium, she is progressing in her training and her personality is beginning to shine once again.

For his part, Presley is an adult male bottlenose dolphin. Born at Sea World in San Diego, Calif., he's at the Clearwater Marine Aquarium for an extended period and was once a daily performer at the New York Aquarium, to which he'd been "loaned" for several years.

Both of these dolphins are part of the aquarium's Marine Mammal Program. Trainers work with them on a daily basis, providing them with a structured, nurturing and stimulating environment.

It's great for the dolphins, but the Marine Mammal Program also offers vital public education through two ongoing features: "Day with a Dolphin," which offers a behind-the-scenes look at dol-

phin training, care and conservation; and "Trainer for a Day," which allows participants to shadow trainers through a day of food preparation, animal care, exhibit maintenance and animal training.

The enthusiasm surrounding the dolphin tanks touched every other exhibit I saw. Obviously, seeing Presley jump in the air thrilled the children, but so did the opportunities they had to touch silky stingrays in the nearby hands-on beach exhibit or to learn first-hand about caring for sick and injured marine animals. At every turn, my pride in being involved with such a worthwhile enterprise kept growing.

To Good Use

Certainly, it was extremely satisfying to see that our efforts to develop top-quality swimming products were being realized in such an unexpected and emotionally rewarding way.

The filters we'd installed are our Two-Head Smoothie (THS) horizontal sand filters – relatively new units that had been developed to meet the need for cost-effectiveness and high performance in the mid-size range between our popular Triton line and the larger stark filters made by Pentair's Paragon Aquatics division.

In this case, the space-saving design



The aquarium's facilities extend well beyond the rehabilitation and training tanks. These large windows offer easy access to huge displays of local marine life, with everything scaled to the needs of a fascinated viewing public.



Such large, active and well-fed animals place an obvious burden on any filtration system – and the challenge is even larger because the tank is meant to house sick and injured marine mammals. To keep them all as happy and in the pink as Presley (shown here), the water must be maintained to a higher-than-usual degree of clarity and cleanliness.

was ideal for the aquarium's small equipment rooms, offering greater flow with fewer filters. The 360,000-gallon pool originally used 11 Triton filters that covered 50 square feet of floor space. These were replaced by just two THS filters, which feature longer sand beds that allow for far more filter area (up to 27 square feet) in a compact package.

So far, says Meier, the filters are working out well. In fact, the new filters have a footprint of just 15 square feet, opening up the equipment room for much easier maintenance and control.

More important than the space saving, however, is the improvement he's noticed in water clarity – an improvement that has led to a reduction in maintenance costs, which is a key consideration in bodies of water containing marine mammals. The equipment room is now so tidy, efficient and modern, he says, that he's planning on including it as part of some facility tours.

Pentair became involved in the project through the Clearwater branch of South Central Pool Supply, a nationwide distributor of pool and spa products. They contacted us because they thought the THS line would be a good fit for the project. When we learned a bit more about the dolphin pool and the overall nature of the renovation program, we were eager to get involved and demonstrate how our products could be applied to meet the aquarium's special needs. We also saw it as an opportunity to support a facility that is both an asset to the environment and its local community.

Our participation was spearheaded by Jim Hunter, the company's Commercial Pool Application Engineer. He lives in Clearwater and was therefore particularly motivated to become directly involved in bringing this phase of the renovation project to life.

One of the unique challenges offered by the facility was a low ceiling in the equipment room. As Hunter soon discovered, installing the THS tanks with their optional automatic backwash face piping and diaphragm valve kits would mean raising the ceiling, lowering the floor or modifying the piping.

For cost reasons, the options quickly boiled down to one: piping modification.



Our role in the renovation had to do with replacing an old row of 11 small but space-consuming filters (A) with a pair of large ones with a much-reduced aggregate footprint (B). The change has given aquarium staff much more elbow room in the equipment area, but the low ceilings in the space meant we had to reconfigure the piping with a much lower profile than usual.



In collaboration, Meier and Hunter, with some help from Paragon Aquatics, patiently designed a low-profile, parallel plumbing system that now allows four pumps to circulate water through the two THS filters independently – two pumps per filter. Backwashing of each filter is also controlled individually using the programming available with the automatic backwashing option.

Facing the Future

Understandably proud of this phase of

the renovation, Meier is sincere in saying he hopes to include the equipment room as part of his behind-the-scenes tours. But that's just one small component of a truly ambitious set of long-term plans for the facility.

There's no question that the Clearwater Marine Aquarium's wonderful programs touch every human emotion and serve a wide range of needs in a positive way. Despite tremendous growth and development, however, the aquarium remains a working, "neigh-

borhood” facility – a place where children and adults alike can visit any time to wonder at the never-ending diversity, grace and beauty of various creatures of the sea.

The filter project for the marine mammal pool is now complete, and the renovation of the turtle hospital is under way. As part of its ongoing fund drive, the aquarium received a \$100,000 grant from the city to pay for renovations to the habitat for Mo, an endangered loggerhead turtle, as well as an expanded deck over the lagoon that surrounds the facility.

It's slow work, says Meier, but with a combination of community support and corporate sponsorship, it's all coming together. The filter project for the dolphin pool was an early step in the right direction, but there are many more habitats that need new filter systems – so it looks as though I'll be back in Clearwater several times in the next five years and will have the opportunity to watch this whole, soul-satisfying renovation project unfold.



Full Circle

The Clearwater Marine Aquarium's nationally recognized Full Circle Program is a particularly impressive example of the kind of program that made us at Pentair so proud to be involved in this renovation project.

It's a set of specific activities that offers animal-assisted therapy sessions to children from four to 17 years of age who have physical or mental disabilities and enables them to interact with dolphins, river otters, sea turtles and stingrays as they learn about marine environments. The program has built such a reputation that it has won coverage in USA Today; on HBO, Animal Planet and the PAX network; and in the book, *Dolphin Key*, by John Land.

— M.F.



The aquarium's mission as an educational institution has led to the establishment of several areas where children and adults can “interact” with marine creatures. One popular spot is this shallow tank, which permits close encounters with a number of rays.

Kitchens



of Distinction

Outdoor cooking and entertainment areas are becoming more and more popular among **his mid- to high-end clients** in California's Silicon Valley, observes watershaper Paul Benedetti. That's why he now sees **'exterior kitchens'** as **much more** than an afterthought and has instead found ways **to integrate** them fully into his work with homeowners, from the start of the design process through to a **highly functional finish**.

What started as a slow simmer has now come completely to a boil.

Ten years ago, precious few of our clients had any interest in setting up outdoor cooking areas to go along with their pools, spas and waterfeatures. That's certainly not the case today, when fully 90% of our clients want us to set up some sort of kitchen amenity as part of their deck and patio areas.

You don't have to be a marketing genius to see what's happening: It's great fun to prepare an entire meal outdoors on a beautiful day or warm evening, and having the necessary facilities at their disposal leads these homeowners to use their outdoor cooking areas more and more as time goes by, both for entertaining and for their own enjoyment. When it's warm, outdoor cooking keeps the heat out of the house. And during parties, the knot of guests that tends to gravitate toward the kitchen can now be dispersed over larger outdoor areas where everyone can enjoy the watershape, the landscaping and any views the property might have to offer.

For many of our clients, the experience of cooking and eating outside has become a fixture in their household routines. Warm weather certainly helps, but it gets cold here in northern California – and instead of abandoning their outdoor kitchens for

the winter, many of our clients install heaters or ask us to set up fire pits, fireplaces or overhead heating units as part of our work on site.

In other words, this is something our clients want so much that they'll do whatever it takes to make the experience possible – no ifs, ands or buts.

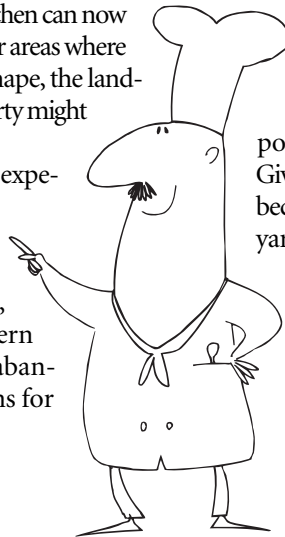
Good Times

For the watershaper, there's much to gain by embracing this trend: From a purely dollars-and-cents perspective, you expand the scope of the design and, therefore, the project's price. As for aesthetics, you have control over the appearance and location of the kitchen area so that everything you touch in the backyard works together visually and functionally.

One more point: Outdoor kitchens are all about fun and enjoyment – a fantastic way to make clients very happy by adding a unique social component to just about any watershaping project.

Those good feelings are extremely important to the overall value of our work. Given the fact that the outdoor kitchen scene becomes so much a part of the clients' backyard experience, it's in our best interest to embrace these amenities rather than make the mistake of dismissing or shying away from the possibilities.

And let there be no mistake: Those possibilities are truly amazing these days,





THINKING BIG: In any discussion of how far a client's desire for comfortable outdoor living can go, this project sets the bar fairly high. Draped over multiple levels with commanding views at every turn, the yard now includes a pool, spa, waterfeatures, multiple decks, grand transitional stairways, multiple shade structures, a complete outdoor kitchen and more – including a uniquely shaped pizza oven.

Making this vision a reality took an immense degree of planning and anticipation, but none of what might seem “unusual” amenities (for pool builders, anyway) were beyond our capabilities. The pizza oven was a test, however, as is discussed in the sidebar on page 47.



because just about anything that can be put in an indoor kitchen can now be put outdoors as well. That includes every sort of grille or cooktop, refrigerators, beer taps, warming drawers, sinks, built-in woks, cabinetry, ice chests, dumbwaiters and even pizza ovens. Add in some seating, shade/shelter structures, fireplaces, umbrellas, lighting and sound systems, and you have a full range of products you

ator have the capacity to become a central backyard feature.

Over and over, I've heard clients of every economic stamp say they're hooked on outdoor cooking, and I know people who love it so much that they even manage to cook outdoors when it's raining.

As is true with any other path you follow in this business, outdoor kitchens require an investment in the learning curve.

I've heard clients of every economic stamp say they're hooked on outdoor cooking, and I know people who love it so much that they even manage to cook outdoors when it's raining.

can include in your clients' "amenities menu."

That broad set of possibilities opens outdoor kitchens to a surprisingly broad range of disposable-income levels. On the high end, we see areas that are set up with large-scale catering in mind – huge counters and storage areas, restaurant-grade grilles and cooktops and, in one case, an underground tunnel from the indoor kitchen to the outdoor area to facilitate moving food and dishes back and forth without having staff march their trays of food and service items through the guests. For clients of more modest means and social ambitions, a simple bar with a grille and a refriger-

ator have the capacity to become a central backyard feature. There's a large set of considerations and constraints I'll get into just below, and I can say from experience that when you don't take all of these things into account you will end up returning to the site to fix or rework certain things again and again.

Every job is a little different. Even now, having installed outdoor kitchens for years, we still run into new hurdles. I can say without hesitation, however, that the rewards far outdistance the risks.

Around the Kitchen

In approaching these installations, thinking things through and anticipating potential trouble spots is the key. Simply stated, the challenges you run into with

these installations tend not to be all that complicated, but when you do misstep, the consequences, while seldom disastrous, are often quite painful.

In other words, the old saying about an ounce of prevention being worth a pound of cure definitely applies.

As a basic example, when we first began installing outdoor refrigerators, which are typically recessed in a nook below a countertop, we ran into the problem of how to turn them off when they're not in use. That may seem like a dumbbell issue, but when you enclose the refrigerator on all sides but the front, you make it nearly impossible to access the power switch, which is almost invariably mounted on the back of the unit.

In this case, the solution was a bit of product knowledge on our part and some helpful product evolution on the part of appliance manufacturers, who've started producing models that feature an on/off switch on the front. You can't imagine how many headaches that simple technological leap forward has saved through the years!

But our learning curve with refrigerators didn't stop there. We also now know that you need to pitch the decking beneath the refrigerator ever so slightly so that water doesn't pool under it. We figured that one out after noticing that the foot pegs on one unit had begun to rust. Again, not a huge problem, but we *did* have to pull out the refrigerator and sand-



blast that part of the deck.

We've also discovered that you need to account for the heat produced by the refrigerator's coils. Because they're usually back-mounted, they cause a great deal of heat build-up behind refrigerator – so much so that it can compromise the function of the appliance. For a long time, we simply cut small rectangular openings in the sides of the bar structure adjacent to the refrigerator. If the bar backs up to the side of the house, that won't work – which is why we were glad to find a supplier that makes its refrigerators with bottom-mounted coils and ventilation slots in the front kick panel, thereby eliminating the problem. The is the same manufacturer that now supplies stainless steel leveling feet and a front-mounted on/off switch.

Weighing product selections is thus a crucial part of the process, if only because you need to be certain the appliances you're ordering will fit in the spaces available to them – which is one huge reason why these things simply don't do well as afterthoughts.

With just about any appliance, there are going to be clearance issues and, in some cases, venting requirements. You also need to design countertops in consideration of the dimensions of sinks, cooktops and other fixtures. In fact, the right way to do the job is to start with the fixtures and appliances and have the countertop material, often polished granite in our work, cut with the precise openings before the material comes on site. You'll also discover great value in leaving yourself some wiggle room – including

Although it often makes sense to locate an outdoor kitchen in the same general area as the watershape, they need to be far enough apart so that splashing won't threaten to douse the food (or the cook).

generous room underneath counters, where you'll be plumbing, mounting and connecting a variety of items.

Place Settings

These practical considerations are not unlike those that go into selecting materials for use in watershaping projects and into setting up efficient equipment pads. And we've found other areas where the thought processes are quite similar in stepping from pools or spas to outdoor kitchens – specifically when it comes to an issue such as choosing locations.

Many clients rightly view these outdoor areas as direct extensions of the home's interior. In most cases (but not all), this means that the cooking area is placed in a deck area within a few steps of the home and preferably of the kitchen, if possible. This makes sense when you consider the need to transport food and dishes and other supplies from one space to the other.

This choice often works well because the most significant and spacious deck areas are often adjacent to the home, and in some cases you can use the architecture of the home as part of an overhang for a bar or some other amenity.

That said, it's also important to think about the possibility of setting up the cooking area as a separate space with its own focal points, seating areas and ambience. Especially for properties with spectacular views (of which there are many in our region), the kitchen area may be best placed at some distance from the home, where hosts and guests can drink in the vistas while cooking, dining or socializing.

Certainly, you must also consider the cooking area's location relative to a swimming pool, spa and other waterfeatures. Although it often makes sense to locate an outdoor kitchen in the same general area as the watershape, they need to be far enough apart so that splashing won't threaten to douse the food (or the cook).

This is why in many cases we distinctly separate the kitchen area from the watershape. It's also why, in making such decisions, we always weigh the clients' need or desire to view the pool area from the kitchen area for purposes of socializing, serving drinks over the bar or supervising children.

And wherever you place the kitchen, you need to recognize that you're dealing with an important set of practical issues that include ergonomics, the wind and weather, access to utilities and wastewater drainage, and the structure of the kitchen area itself. These all must be factored into decisions about placement.

For example, you need to consider where the smoke from a grille, cooktop, firepit or wood-burning fireplace will go, which means you should have a good grip on prevailing winds as you guard against sending smoke into the house through open windows or doors. You also need to consider the damage smoke can do to stucco and other exterior finishes over time and avoid the classic mistake of placing a market umbrella directly over a cooktop.

Synergies

One of the best indications of how strong the trend to include outdoor cooking areas in backyard construction projects has become is the fact that a great many kitchen-appliance manufacturers are adjusting their products to meet installers' specific needs.

From front-mounted on/off switches on refrigerators to upgraded stainless steel fixtures designed specifically for outdoor aesthetics, these suppliers have stepped up to deliver products better suited to the easy outdoor lifestyles we want to provide as installers and our clients want to enjoy as long-term users.

Reviewing the possibilities and familiarizing yourself with the features, advantages and disadvantages of these outdoor appliances and fixtures will help you avoid a great many installation and service problems. And if you don't know ahead of time that you shouldn't install chrome-plated plastic fixtures on outdoor sinks, you soon will!

– P.B.



The installation of the pizza oven was a challenge in that everything about its construction was new to us. Beyond some of the unusual postures we had to take in putting it together, however, it was largely a matter of following the manufacturer's demanding instructions to the letter – and then stepping back to let the owner serve up some fine, home-made pies.



In the Oven

Even though outdoor kitchens are becoming wildly popular, pizza ovens aren't usually part of the package – but that's exactly what one of my clients wanted last year.

It's probably no surprise that this particular client was Italian. Being of Italian extraction myself, I could relate to his desire to have a pizza oven. After some digging, we found a manufacturer of handmade terra cotta ovens in Watsonville, Calif., who let us know about the special pad and enclosure we'd have to build to accommodate the concrete-cracking heat these ovens generate.

The pad we subsequently installed is fourteen inches thick and heavily reinforced with both rebar and wire mesh. First, we poured a six-inch concrete slab. Atop that, we set up a four-inch-high curb around the pad's perimeter before pouring a layer of kiln-dried, moisture-free sand into the space contained by the curb. (This step is critical, as the steam created from moist sand would cause the structure to crack violently.) On top of that, we installed another reinforced slab, this one also four inches thick, upon which we mounted the oven's terra cotta floor and walls.

All of this was done per manufacturer specifications, which informed us that the top slab would crack from the intense heat, no matter what we did.

Next, we set up a large, stucco igloo around the oven – #10 wire to which we wired stucco lath to receive the initial scratch coat. On the top of the igloo, we left a large access port into which we later poured several big bags of vermiculite to fill in all the spaces around the oven as its insulation. We patched the hole, finished the stucco and turned the pizza oven over to the client – all at a cost that exceeds that of many custom pools.

It was an unusual installation to be sure, but we did eat some fantastic homemade pizza as part of the deal!

– P.B.





Photos courtesy Jim Lord Landscape Service, Menlo Park, Calif.





OUTDOOR ROOMS: Here's another example of an outdoor kitchen that's set amid all the proper accoutrements. From the fountain on the other side of the arbor to the spa adjacent to the kitchen's U-shaped countertop, great attention was paid by the designers at Jim Lord Landscape to linking spaces visually while setting them up as discrete outdoor living spaces.

The fact that kitchen-amenity manufacturers have jumped into the marketplace for outdoor cooking facilities with both feet is a big help. The products are generally well designed and have what it takes to stand up under the tests of time and the elements.



Down-lighting on the barbeque is also critical: I'm not satisfied with visions of clients holding flashlights in their mouths or wearing miner's hats as they slice into juicy steaks to check how well they're cooked.

Major Construction

Elaborate kitchen areas, with their concrete support structures, stone veneers, stainless steel appliances and all the other accoutrements of fine outdoor living, bring significant weight with them that needs to be considered as part of the design and engineering process, particularly if the area is near a pool or spa.

If you've set up a big kitchen area adjacent to a pool on a grade-beam foundation, for instance, or if the area is set up on a cantilevered deck, your engineer may want to integrate the support systems of the pool and kitchen to avoid problems with hinging or differential settlement, depending on local soil conditions.

Our cooking islands and bars are usually made with concrete block finished with various combinations of stucco, tile and stone. We wouldn't dream of moving ahead without an engineer's help and as full a range of structural details as we get with our watershapes.

There are also more mundane (yet still critical) concerns you need to consider, such as access to gas and waste lines and adequate electrical service. Electrical circuits should be protected by GFCIs, and outlets should be located in well-considered, convenient locations. If your clients choose a barbecue with a rotisserie attachment, for example, and you've failed to place a power outlet nearby, you can see the headaches coming from a mile away.

As suggested above, decking contours and under-drains are extremely important. If the design includes a built-in ice chest, for example, it should be equipped with a drain plumbed to waste so that stagnant water doesn't accumulate.

In other words, designing and installing outdoor kitchens is not all that far removed from the realm of watershaping, where the key to success is often in the details and in anticipating in the earliest phases of the project what it'll take to work through the final phases with the greatest ease.

But more than anything, outdoor kitchens are great fun and, for watershapers, constitute great and wonderful adjuncts to our goal of using water to create spectacular environments. All of those benefits are maximized when you think about these areas from the outset and plan carefully to accommodate the many issues you'll run into along the way.





Pocket Change

By Bob Dews

The way pond/stream artist Bob Dews sees it, simple structures he calls 'dirt pockets' could revolutionize the way plants are used in naturalistic watershapes. For starters, he says, these pockets give him unprecedented flexibility in taking care of the aesthetics. In addition, they also offer benefits when it comes to the sustained health of the streams, ponds and cascades he's been installing for clients in the most beautiful parts of North Carolina.

To make a pond or stream successfully "natural," the designer and installer must know what it takes to produce an illusion so convincing that observers are certain the end product is actually a naturally occurring body of water.

It's no secret in the trade that this illusion is made or broken at the edges, where the physical boundaries between waterway and the hardscape and plantings must be both precisely controlled and completely concealed. Necklaces of stone won't cut it, nor will waterlines sharply defined by lines of terrestrial plants. In fact, the challenge here is to make visually linear boundaries disappear, and that's a tall order for even the best pond/stream designers and builders.

In my own projects, I work almost every day in tweaking and refining my approaches to these margins and edge treatments, and I've come up with many ways to enhance the natural appearance of my ponds and streams. In recent years, I've been honing a technique for landscaping in and around the water that's given my work an entirely new dimension: It's a type of planting container I call a "dirt pocket"—a simple structure that lets me plant a broad range of non-aquatic plants directly in contact with the water.

Beyond the Pot

With dirt pockets, I've been able to broaden the variety of plants I use along edges and elsewhere in my watershapes. At the same time, these dirt pockets improve water quality; turn some of the most demanding plants (in terms of their water requirements) into the easiest of all to maintain; and dramatically increase the visual appeal of all my ponds, streams and cascades.

Simply put, dirt pockets are structures I use to contain soil and plants' root systems. Using cuttings from sheets of geo-textile underlayment material, I hold the planting in a ball form or in whatever shape I want and place it somewhere directly in contact with the water within the liner. The root system is fed by the constant flow of water moving through the watershape.

I'll place plants at different elevations relative to the waterline to accommodate their specific needs for water. Some of the root balls will be completely submerged, others will crown just above the surface, and still others will be positioned above the waterline, allowing only the bottoms of the roots to touch the water.

I first developed this technique in my efforts to conceal the locations of the pots I'd always used to contain plants in or near the water. I'd tried for years to disguise these pots and make them look natural on the banks of



One effective use of plant pockets is in softening the “edges” that often become a little too apparent at points of elevation change. Here, for example, the plants at the water’s level break down any possible sense one might get of too-regular stone stacking behind them.

my clients’ ponds and streams, but I could never get them to *disappear*, which is what I really wanted.

As a result, many of my past watershapes looked great during the growing season, when lush foliage hid the pots – but it was an illusion that held up for just three or four months out of the year in our area. The rest of the time, when the foliage retreated or disappeared, the outline of the circular pots would be visible throughout the space, disrupting any pretense of “nature.”

Unlike pots, which have predetermined shapes and sizes, my dirt pockets can be tailored to any size, shape or depth; can easily be concealed and used in an amazing variety of ways; and, because they are

Edge Contrasts

Edges are tough because of the two contrasting elements we as watershapers are trying to combine.

Liquid water is smooth, flowing, silky, and graceful. It’s also highly reflective, transparent and ever-changing. By contrast, rock is solid, hard, heavy, seemingly unchanging, not very reflective (in most cases) and certainly not transparent. So often, the tendency in watergarden design has been to surround the silken water with unyielding rocks with little else in the mix to soften the visual boundaries between the two materials.

In essence, it’s akin to building a swimming pool or fountain with a tile edge. That’s fine if it’s what you mean to do, but it’s certainly not the desired effect in a naturalistic pond or stream. One of the best ways to soften that transition is through the use of plants, which are solid but soft, pliable and subtly textured.

Unfortunately, we’ve all been taught to confine plants in solid containers when we place them in our watershapes. That might work for lilies and lotuses, which grow from the bottom of the pond, but when you’re working to make seamless, natural-seeming transitions from water to rock, the last thing you want to see is a plastic pot.

Managing the aesthetics of these transitions is what dirt pockets are all about. To do so in a way that creates a healthy situation for the plants and the stream itself is the icing on the cake.

– B.D.

permeable, can be used to create an environment in which the water of the stream or pond nourishes the plants and at the same time is being cleansed of troublesome organic compounds.

Wondrous Flexibility

As mentioned above, I make these dirt pockets using scraps of geo-textile fabric of the sort used as an underlayment to protect liners from the surrounding soil.

I start by arranging rocks of different shapes and sizes to support the contours of the pocket – basically a mold for its shape. Then I press the fabric into the void defined by the rocks and fill it with

a sandy-type soil. The fabric retains the soil while providing an area of natural transition between water and rock.

A pocket can be small – a single root ball, say, wedged between two rocks – or large enough that it sprawls over the entire side of a pond basin. From small to large, the flexibility of this approach is basically limitless, and at this point I'm happy to place dirt pockets anywhere the water flows.

Sometimes that flow is rapid, sometimes it's very slow. Sometimes the pockets are in the middle of a stream; other times I'll start them off under water and carry them across the edge to dry land to establish a riverbank look. They can be

used to set up planted spaces in the midst of elaborate rock formations, or to allow ground cover to come down into the water from along the banks.

I've also set up eddies, peninsulas and islands as well as broad, submerged shelves that contain a range of plants, thereby providing a layered transition to and across the shoreline. Before I lit on dirt pockets, every one of these effects, all of which seem simple to me now, were causes for concern because they represented an opportunity to blow the illusion of "nature."

Best of all, using dirt pockets puts me in a position where I can use rocks the way I think they should be used – for dramat-



We often use plant pockets in the middle of our streams. Whether in flat sections or as part of cascades, they add compelling visual interest – and there's no intrusion of the rims of plastic pots to break the illusion if or when plants die back in the winter.



Plant pockets are particularly effective when used in establishing a stream's banks. Having plant material rising at the water's edge and draping over surrounding rocks is obviously preferable to an artificial-looking necklace of stones along the bank.

ic, aesthetic effect rather than to stabilize or define an edge. With dirt pockets, I can put rocks wherever they're needed to increase the impression that the observer is seeing a natural formation.

Healthy Competition

I came at dirt pockets through experimentation with ways of enhancing the natural filtration that occurs in bog areas.

I often set up bogs as the headwaters of my streams. It's an aesthetic choice: It has always seemed to me that the place where water wells up from a manifold hidden beneath the bed of rocks lining the bottom of a bog would be the perfect place for treating the water naturally. My thought was that, by placing planting pockets in the bog area, water flowing around and through the root balls would let organic compounds be absorbed by the plants – good for the plants, *great* for the water.

I've never seen these pockets as a replacement for some sort of mechanical

bio-filter. In fact, combining dirt pockets with a properly designed and installed circulation system is a pathway to a level of water quality that neither approach can achieve on its own.

As I've studied plants and the dynamics of man-made streams and ponds, I've become increasingly aware of how useful a service plantings can perform with respect to water quality. We all know that plants act as biological filters by absorbing nutrients through their root systems. It therefore follows that you thwart this function by using pots and their impermeable plastic.

It also stands to reason that pots don't offer plants the best of environments in aquatic conditions. Why else, after all, is it suggested that plants for ponds should have "acclimated" root systems that will not decay in stagnated water conditions?

Because a dirt pocket enables water to move through the root base, it allows the water in the root ball to get refreshed via osmosis and allows minerals and other

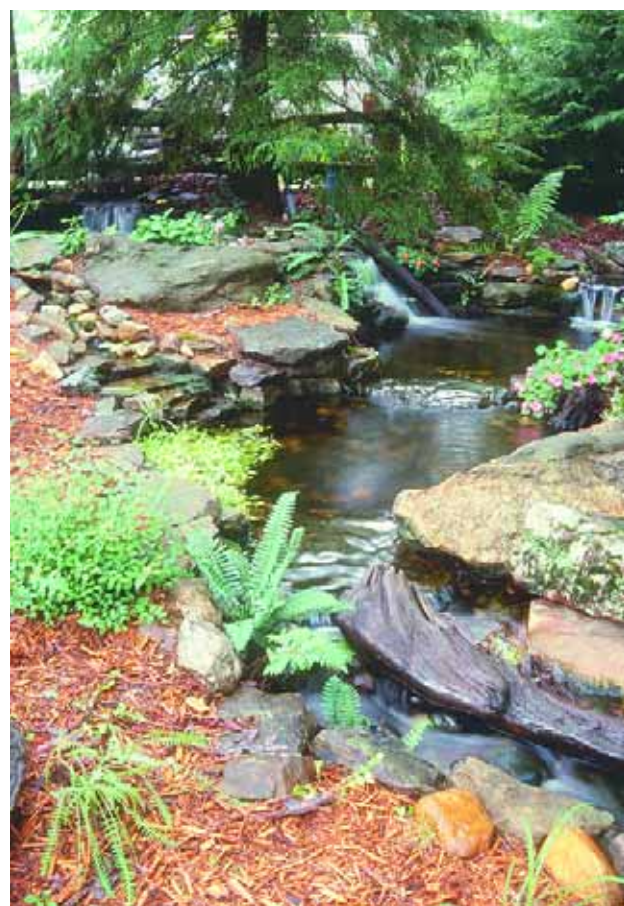
nutrients to penetrate the dirt in the root area through diffusion. This allows the plant to interact fully with the water and become a secondary filtering system.

As this cycle continues, the nutrient level in the water decreases and the water becomes less susceptible to a whole range of problems. Right from the start with dirt pockets, for example, I noticed that problems with algae and water clarity disappeared and that, almost without exception, plants in dirt pockets did spectacularly well.

It's the perfect trade-off: Algae starve while desirable plants receive constant feeding and grow larger with more vivid greens and blossom colors than I've ever observed with pot-bound plants – or even with plants in the ground, where their needs for nutrients and water are not met with such consistency.

Plant Manager

Of course, you have to choose plants



that require a great deal of water for dirt pockets.

Don't be discouraged by the relatively short list of "aquatic plants" available for watergardens: There are numerous species, widely available at nurseries, that are *not* classified as "aquatic or marginal-type" plants but that *do* enjoy wet (but not stagnant) conditions. These are the plants you want for dirt pockets, including some of my favorites: hostas, ferns, lobelia and sedum. Even impatiens and other annuals will thrive in these conditions.

This approach has changed the way I look at plants in nurseries. Typically, plants are considered most desirable if they're able to look good without needing a great deal of water. In fact, the trend toward "drought-resistant" plants in recent years has changed the nature of the nursery business in many parts of the country.

These days when I'm looking for plants, I ask for those that just can't seem to get enough water – and I'm pleased to report that the folks at my local nursery now know that when they see me coming all they need to do is point me toward plants

that have an endless thirst.

Plants within this thirsty class are far from uniform in their water requirements. For hostas, for example, I build up the dirt pocket's base so that the roots will be above water level, leaving just the tips of the roots to stay wet in the saturated soil. With thirstier plants, including some ferns and grasses, I use dirt pockets that are completely or partially below the surface.

I don't claim to be a botanist, and I'm really only familiar with the way plants behave in my area (Climate Zone 6), so I rely on the expert advice I get at my local nursery. I also experiment a great deal, sometimes successfully, sometimes not. I'd suggest that anyone giving dirt pockets a try will be in the same position, both with respect to needing advice and needing to throw caution to the wind every once in a while and give things a try.

Whenever I find a new plant for a trial run in my dirt pockets, I typically buy three and try them at different levels relative to the waterline in my own stream at home. Whichever one flourishes the

most, I'll use that planting level when I set things up for my clients' watershapes.

Fun With Dirt

As I've moved through my own learning curve with this technique, I've discovered some amazing things.

Early on, for example, I observed that many types of plants would send roots out through the mesh of the pocket to dangle freely in the water, absorbing nutrients hydroponically. I've also seen certain types of plants send out runners beneath and between rocks that emerge several feet away from the original pocket. And I've seen annuals (including impatiens) that reappear in spring all on their own – something I've never seen these plants do in pots.

Mostly what I've seen are species of plants that would be hard-pressed to receive enough water on land and go quite crazy in a dirt pocket and relatively few other plants that won't thrive if they're placed at the right level relative to the waterline. In fact, most plants that don't work do so for reasons other than too-moist conditions, including those plants with sharp,

penetrating roots that tear through liners.

Fortunately, unacceptable species seem to be few in number, and it's easy to steer clear of them with a little advice from your nursery about root characteristics.

One of the nicest things about dirt pockets is that they work just as well in retrofits as they do in new projects. I've found it particularly encouraging and rewarding to go back to past projects and remedy aesthetic flaws that had always bothered me. It's also great to go to other peoples' projects and get rid of the necklace effect with a few well-placed dirt pockets. I've enhanced waterfalls, shallow areas, headwaters, lower ponds and especially edges of all sorts with this simple technique.

I've also found that my clients who enjoy gardening get hooked on making their own dirt pockets and adding them to their water-gardens. It gives them a ready way to interact with the water, and they'll often get quite adventurous in their experimenting with different plantings. And because they're spending more time with their watershapes, they also tend to pay helpful attention to weeding and removing debris from the water.

I've taught classes explaining dirt pockets to other pond and stream builders. The reports that filter back to me have all been strongly positive, particularly with respect to the lush plant life, clear water and aesthetic flexibility my students are now using to great effect. Through their testimonials, I've been able to confirm that this technique works through a wide range of climate zones and in planting schemes we don't use much in my region.

When you boil it all down, it's the visual effect that gets me every time. The way the dirt pockets let me soften transitions from water to rock, the improved appearance of the water, the way plants and rocks and water are more fully integrated within the design are all fantastic. And who knows? Maybe you'll find a new favorite plant that you never dreamed could be in a pond!

Setting up a plant pocket is quite simple. Choose a likely spot, such as the one bounded here by the branch and three large stones (A), remove a rock or some dirt and replace the depression with a scrap of geo-textile fabric to line the hole (B), fill it with appropriate soil (C), then insert plants selected to thrive in the environment you've established (D).





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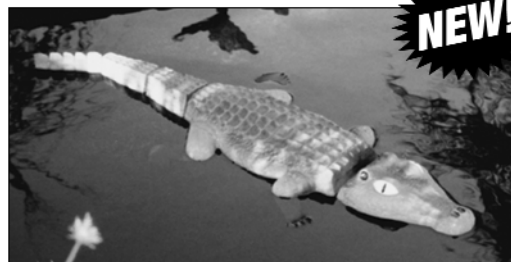
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OF INTEREST

Continued from page 58

DECORATIVE POTTERY

Circle 104 on Reader Service Card



Garden Art International, Irvine, CA.

GARDEN ART INTERNATIONAL imports garden pottery from around the world, including an extensive line of Italian terra cotta urns, bowls, vases, boxes and more. The terra cotta line is available unfinished and with an array of custom treatments, from weathered washes and rustic finishes to a variety of coloring rubs. The company also offers concrete wall fountains and more.

UNDERWATER LIGHTING

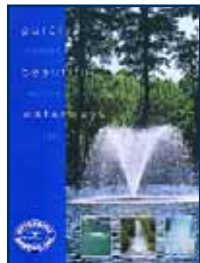
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HYDREL has published a 64-page, full-color catalog of its underwater lighting systems, including niche- and base-mounted lights for fountains and pools, special fixtures for wet/dry applications and standard swimming pool lights. Available with a variety of lamp choices and full lines of accessories and electrical equipment, the systems are all designed for easy installation and meet all applicable standards. **Hydrel**, Sylmar, CA.

AERATING SYSTEMS

Circle 106 on Reader Service Card



OTTERBINE BAREBO has published a brochure on its line of aerating fountains, industrial aeration systems and display fountains. Adopting technologies used in wastewater engineering and lake management, the products address the need to keep water clean while providing beautiful spray patterns above the water's surface. The brochure includes complete technical specifications. **Otterbine Barebo**, Emmaus, PA.

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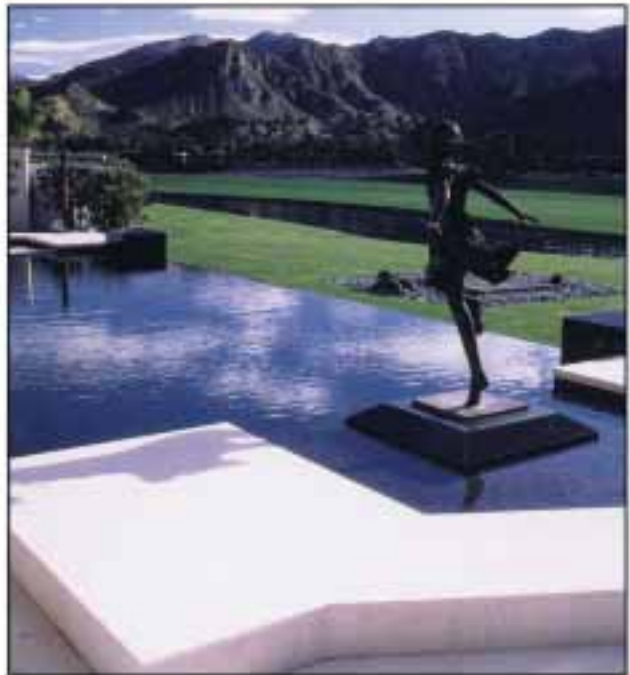
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NATURAL PEBBLE FINISHES

Circle 107 on Reader Service Card



Pebble Technology, Scottsdale, AZ.

PEBBLE TECHNOLOGY offers Pebbletec, a pool finish that uses naturally tumbled pebbles and specially formulated cement products and additives. These materials are mixed and applied pneumatically before hand-troweling reveals the top layer of pebbles. Available in various colors, the material works for new pools and renovations in both residential and commercial settings.

PAVING SYSTEMS

Circle 109 on Reader Service Card



Bomanite, Madera, CA.

BOMANITE offers concrete paving systems for residential and commercial settings. The cast-in-place, colored, textured and imprinted architectural concrete is available in more than 100 different patterns and in 25 standard as well as a virtually limitless array of custom colors. Designed for heavy-duty service in high-traffic areas, it's ideal around everything from backyard pools to municipal fountains.

DEBRIS REMOVAL SYSTEM

Circle 108 on Reader Service Card

PARAMOUNT POOL & SPA SYSTEMS offers the MDX debris-removal system. Featuring a funnel-shaped design that compresses and directs debris to the outlet port for quicker, more powerful removal, the unit also provides anti-entrapment protection with a secondary back-up drain, low-profile design, large uneven surface and smooth edges that are friendly to both bathers and robotic cleaners.

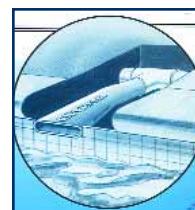


Paramount Pool & Spa Products, Tempe, AZ.

OVERFLOW FITTINGS

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OVERFLO makes a flat intake opening that provides overflow protection for pools and fountain basins with an aperture that offers up to five times the drainage capacity of common one-inch-diameter pipe drains and a lesser tendency to clog with debris. The drain fits flat in the bond beam and transforms into a round drainpipe beyond the beam for easy connection to standard drainage systems.



Overflo, Tazana, CA.

Continued on page 66

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Products, Chico, CA.

ROLLER COMPACTOR

Circle 113 on Reader Service Card



MULTIQUIP offers the AR-13H tandem drum roller as a lightweight solution to large compaction challenges. The 3,088-pound ride-on roller vibrates at 4,000 rpm and is built for sub-layer granular and mixed-soil compaction jobs. It has a 35.7-inch drum width as well as 1-1/4-inch clearance on the right side for operation

near walls and obstacles with unobstructed driver visibility. **Multiquip**, Carson, CA.

DIFFUSED-AIR AERATORS

Circle 112 on Reader Service Card

AQUAMASTER FOUNTAINS & AERATORS has introduced AquaAir diffused-air aeration systems to provide any aquatic environment with superior aeration, circulation and destratification. Sizes range from 1/4 to 1 hp, with from one to six dual, self-cleaning membrane diffusers that use a super-fine microbubble technology to produce superior oxygen transfer rates. **Aquamaster Fountains & Aerators**, Kiel, WI.



CONTROLLER FOR SOUND/LIGHT DISPLAYS

Circle 114 on Reader Service Card

GILDERFLUKE & CO. makes the Mp3-50 control system for sound/light displays. When used with an animation option, the device provides sound and control for fountains and other special effects with timing governed with precision by a link to the U.S. Naval Observatory's atomic clock. The device controls small lights, relays and solenoid valves directly; higher-voltage loads are run through relays. **Gilderfluke & Co.**, Burbank, CA.



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NATURAL-LOOK WALLS

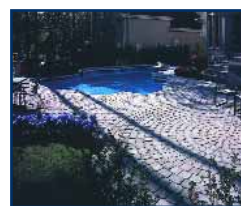
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ANCHOR WALL SYSTEMS offers the new Highland line of retaining-wall products in a range of colors. Designed for commercial and residential applications, the three-piece system uses the company's special rear lip for easy installation and has a face texture that replicates natural stone. Gravity walls can be built to four feet high; reinforced walls can be built to any height. **Anchor Wall Systems**, Minnetonka, MN.

STONE PRODUCTS CATALOG

Circle 116 on Reader Service Card



BELGARD has published a 48-page, full-color booklet highlighting its paver, wall and curb systems. Using before-and-after illustrations of a wide range of projects, the publication is designed to inspire design ideas – and give specifiers a tool to use in helping clients visualize results. There's also a section on specific paver, wall and curb types along with a complete installation guide. **Belgard**, Fontana, CA.

MULTIPLE-POSITION VALVES

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PRAHER VALVES makes manual and automatic multiple-position valves for the control of circulation systems. With just one moving part, the valves provide six indexed position functions with the turn of one handle and work at flows up to 340 gpm with minimal pressure drop. The automatic system option features integral circuits and actuators for complete circulation-system control. **Praher Valves**, Barrie, Ontario, Canada.

HIGH-RATE SAND FILTERS

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ASTRAL offers commercial high-rate sand filters ranging in tank diameter from 42 to 93 inches. Made of non-corrosive fiberglass and polyester resin, the lightweight tanks are designed to allow for efficient use of fewer filters in most applications. The operation of single or multiple filter tanks can be managed with four- or five-valve manifolds that allow for versatile filter-cycle control. **Astral**, Jacksonville, FL.

Continued on page 68



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OUTDOOR GRILLS

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NAPOLEON makes the Prestige II built-in grille head for outdoor applications. Featuring a space-saving roll-top lid in black, green, blue porcelain or stainless steel, the grille has a restaurant-style rear rotisserie burner, a built-in temperature gauge, ergonomic knob design, one-touch ignition and a patented cooking-grid system and can

be installed in custom islands with other outdoor-kitchen amenities. **Napoleon**, Barrie, Ontario, Canada.

LANDSCAPE LIGHTING SYSTEM

Circle 121 on Reader Service Card



J.D. RUSSELL CO. has introduced Lighted Duratube, an easy-to-install, easy-to-retrofit component for use in any low-voltage landscape-lighting scheme. Ideal for high-traffic areas where safe but subtle lighting effects are desired, the two-part system in-

cludes a 12-volt light rope encased in a bendable-steel edging that forms a safe, rounded edge that casts a subtle glow throughout a landscape. **J.D. Russell Co.**, Tucson, AZ.

POOL/SPA CONTROLLER

Circle 120 on Reader Service Card



PENTAIR POOL PRODUCTS has introduced the IntelliTouch control system for pools and spas. Easy to program, flexible and offering such features as freeze protection, pool-cleaner lockout and various system alerts, the device features a large, high-resolution control-panel screen that manages up to 40 functions and is available with either four- or ten-function spa-side remotes. **Pentair Pool Products**, Sanford, NC.

DECORATIVE RAILINGS

Circle 122 on Reader Service Card



WEYERHAEUSER has introduced a decorative railing system to complement its ChoiceDek decking materials. Made from a combination of recycled oak-wood fibers and polyethylene, the strong, durable railings include large vertical posts, square or turned balusters, a universal member (pre-grooved for lighting) that functions as the bottom rail as well as a support for the handrail. **Weyerhaeuser**, Federal Way, WA.

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POOL/SPA HEATING SYSTEM

Circle 123 on Reader Service Card



VERTEX INTERNATIONAL markets the Volcano heating system. Designed to use recycled energy via heat-transfer technology, the modular device transforms a refrigeration system (such as a home's air conditioner) into a pool/spa heater that can maintain water temperature between 80 and 103 degrees. Units feature control modules that monitor system status and water temperature. **Vertex International**, West Palm Beach, FL.

RETAINING-WALL SYSTEM

Circle 125 on Reader Service Card

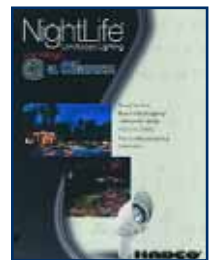


SOIL RETENTION PRODUCTS manufactures the Verduro 30 retaining-wall system. The system combines plantable blocks with Posi-Dura geosynthetic fabric to allow construction of walls from three to eight feet in height. No poured foundation is required, and just a simple drainage system is usually sufficient. The blocks are available in a variety of colors and textures. **Soil Retention Products**, Oceanside, CA.

LANDSCAPE LIGHTING BROCHURE

Circle 124 on Reader Service Card

HADCO has published literature on NightLife, a line of low-voltage landscape lights designed for a wide variety of applications – from path and accent lighting to lighting for steps and details as well as under-water and inground applications. The eight-page, full-color brochure highlights available fixture styles and colors and includes details on finishes, wattages, lamp types and materials of construction. **Hadco**, Littlestown, PA.



POND-EQUIPMENT CATALOG

Circle 126 on Reader Service Card

OASE PUMPS has published a catalog on its pond, aeration and fountain equipment. The 48-page, full-color booklet covers the Strata-vator series of aerating fountains, the Strata-flo series of high-flow surface spray aerators, the Strata-fuser floating sub-surface aerators and a range of accessories. Also provided is a design section complete with sizing requirements and guidelines. **OASE Pumps**, Irvine, CA.



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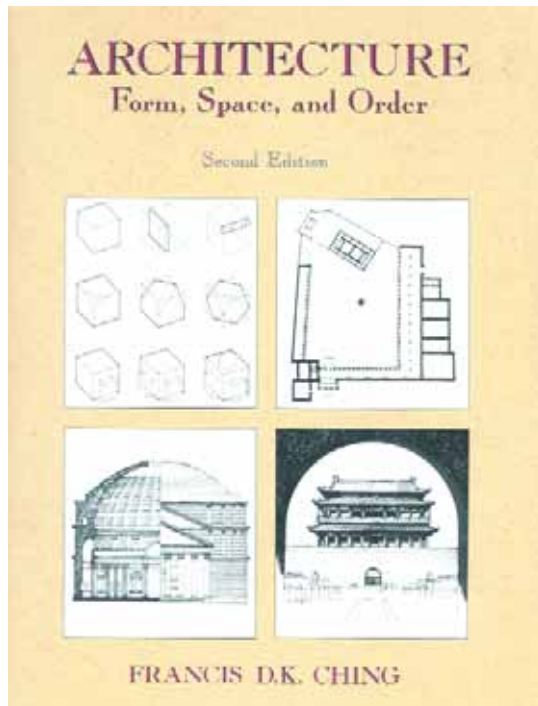
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Explaining Architecture

A paperback edition of Francis D.K. Ching's book, *Architecture: Forms, Space & Order*, had been sitting on my desk for less than a day when my colleague and friend Mark Webb spotted it.

He started talking about the book in a way that made it seem it was a given that we *both* should be completely familiar with it. I had, in fact, just picked up my copy at a used bookstore without ever having heard of Ching or knowing anything about his highly influential body of work.

I soon learned that Webb and many other architecture and landscape architecture students (beyond yours truly) read Ching's work early on in their studies. Feeling that I'd missed out on something important in my education, I dove into the text and soon understood why Webb saw such significance in Ching's approach to teaching architecture.

The text I bought is a revised second edition published in 1996 by Van Nostrand Reinhold. It's one of several textbooks by Ching, a professor in the Department of Architecture at the University of Washington. Other titles include *Architectural Graphics*, *A Visual Dictionary of Architecture*, *Interior Design Illustrated* and *Building Construction Illustrated*, among several others. Most are in their second or third printings and have been translated into a range of languages.

I was fortunate that the 400-page book I had stumbled onto is something of a touchstone for accessing and understanding Ching's system of communicating about architecture and design.

He starts at the beginning with a discussion of the concept of a point, then moves on to cover a line, a plane, a three-dimensional space, vol-

ume and so on. Each concept builds upon a sensible foundation as he develops what he calls a visual and verbal vocabulary of architecture.

He also explains his view that architecture is all about mathematics and problem solving and argues that, while most designers share an innate ability to understand spatial relationships, most of them lack a set of specific terms and concepts that allow them to exploit those relationships as creatively as possible.

He then sets out to fill that gap, offering detailed explanations of specific applications in which fundamental mathematic principles are used to solve problems presented by the conditions of the environment and the nature of the structure being created.

Along the way, he covers the mathematics behind everything from Greek and Roman architecture to the major forms of modernism. He covers, for example, the concept of "The Golden Section," a principle of the ancient Greek worldview that relates all physical forms in both architecture and nature to the ratios and dimensions found in "the numerical relationships manifest in the harmonic structure of the universe."

He explains how the Parthenon of Athens was constructed using this defining principle, then moves on to offer similar analyses of structures across the eras and careers of the masters using a variety of other mathematical principles and formulas. In addition, there are careful explanations and illustrations of the mathematics of scale, volume, line and proportion and of how these elements cut across all styles and modalities.

His treatment of these ideas is so clear and concise that I came away feeling that I had gained a whole new set of terms and concepts with which to comprehend and communicate about the essence of physical design – not the sort of mind-expanding experience you have every day.

To be sure, Ching deals mostly with buildings – but as a landscape architect and watershaper, I appreciate the importance of the principles and concepts he so deftly explores as well as the variety of approaches he uses to clarify his meaning. This book will now be a permanent fixture on my desk, where I suspect it'll soon be joined by other books by Francis D.K. Ching. **MS**

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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THS Series Horizontal Sand Filter

The THS Horizontal Sand Filter is unlike any other filter on the market. Designed to conserve space, save money and provide high performance cleaning efficiency with minimal maintenance, this state-of-the-art filter is available in four NSF-approved sizes, and offers optional manual, semi-automatic and automatic manifolds. Manufactured with Paracote™, a water-based, environmentally friendly coating that offers remarkable surface protection, the THS has a smooth and attractive finish that coordinates with all Pentair commercial pumps and heaters.

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