

Inside: Bruce Zaretsky on Saying 'No'

WATER SHAPES

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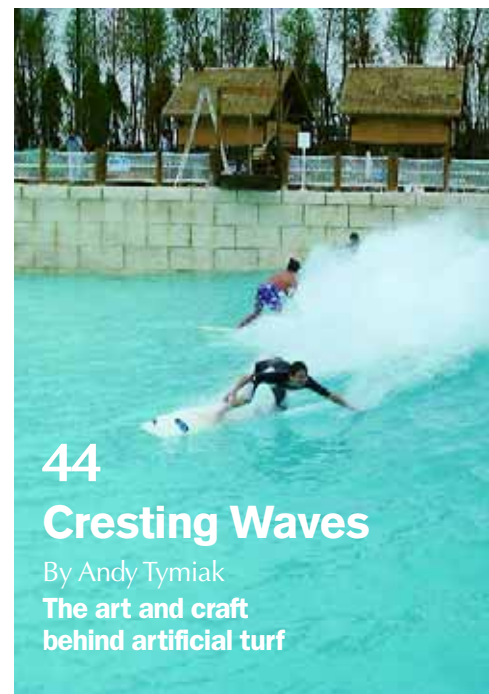
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By Eric Herman

Great Company

In all great human endeavors from the arts to science and industry, we typically find small numbers of pioneers whose achievements are so astonishing that they inspire others for generations to come.

For watershapers, this constellation of luminaries includes famous architects, landscape architects, designers, engineers and sculptors who have defined the ways in which water is used as an artistic medium. Some of these names are familiar – geniuses including Frank Lloyd Wright, Julia Morgan, Ricardo Legorreta, Luis Barragan, Lawrence Halprin, Eric Ore, Isamu Noguchi and John Lautner. Each certainly merits consideration as being among the greatest creative forces of the past century.

In this issue, we consider another whose name belongs on that list: the legendary Brazilian designer and artist Roberto Burle Marx. Inside on page 54, you'll find "A Master at Work," in which Raymond Jungles – a renowned landscape architect in his own right – recounts the years he spent getting to know Burle Marx and traces the influence this master practitioner had on his own work and approach to life.

Along the way, Jungles lets us in on some of what made Burle Marx tick – his history, his work, his love of art and the natural world and, perhaps most significant, his generous spirit. The article includes images of Burle Marx's finest projects along with work by Jungles that to some extent or other reflect the master's influence.

In both cases, we see tapestries of plant material, stone and water woven into timeless spaces that by any fair measure can be considered among the best expressions of "environmental art." Both men may be called modernists, but there's a warmth to what they do in integrating architectural forms, landscapes and water that is sublime, mesmerizing and resistant to mere classification.

If I seem impressed, it's because I am. The words and images are extraordinary, but what gets me is the way in which Jungles shows us how the influence of a master can be embraced, internalized and transmitted through the imaginations of those who follow the master's lead with fresh, new ideas of their own.

Although they are indeed kindred spirits, I'm amazed by how different their work actually is. Jungles doesn't copy Burle Marx, but instead uses what he's learned from him to stoke his own creative fires. When seen side by side as they are here, the projects of these two men become a perfect case study in how the brilliance of an original mind may be reflected and refracted through in the efforts of those who follow the trail someone like Burle Marx has blazed.

For my part, I can't help getting excited when I have the opportunity to work with material of such beauty and dignity. My sincere hope is that when you read this remarkable story and view these stunning landscapes and watershapes, you in your own ways will latch onto the inspiration to be found in true genius.

It's a path worth studying – and *following*.



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Brian Van Bower operates Aquatic Consultants in Miami and is a co-founder of the Genesis 3 Design Group. With more than 35 years' experience in the swimming pool and spa industry, he now specializes in the design of swimming pools, recreational areas and hydrotherapy clinics. As a consultant, he also conducts training and inspections and serves as an expert witness in insurance investigations. From his start with pools in 1967, he's been a pool manager, service technician and contractor, operating Van Bower Pool, Patio & Spas from 1971 until 1991. He began consulting in 1989 and co-founded Van Bower & Wiren in 1995 to specialize in high-end pool-construction projects.

He's been active in trade associations throughout his career at the local, regional and national levels, has won numerous design awards and has been inducted into the Swimming Pool Hall of Fame.

Andy Tymiak is product manager for mechanical systems at Whitewater West, a manufacturer of waterpark systems located in Richmond, British Columbia, Canada. He received his diploma as a Mechanical Engineering Technologist from the British Columbia Institute of Technology in 1990 and has been with Whitewater ever since. Tymiak is currently responsible for mechanical-system design for



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wave pools, lazy rivers, slides and the company's AquaPlay interactive systems. In that role, he coordinates many aspects of electrical design and computer control for wave machines, slide dispatchers and conveyor systems and through the past 17 years has been involved in hundreds of waterpark projects worldwide.

Raymond Jungles is founder and principal for Jungles Landscape Architect in Miami, Fla. His prime inspiration and the key to his passion for landscape architecture stems from his long-time relationship with Brazilian artist and environmental designer Roberto Burle Marx, and his current practice is firmly rooted in Florida

and the Caribbean basin with a focus on residential, resort and community design. Jungles' work also illustrates his interest in and dedication to the preservation of natural habitats and the use of indigenous species. He is the recipient of more than 20 design awards from the American Society of Landscape Architects, including the prestigious Frederic B. Stresau Award of Excellence. He also was named Most Distinguished Alumni in 2000 by the University of Florida and in 2003 was honored as the Landscape Architect of the Year by the American Institute of Architects. He was elected a Fellow of the American Society of Landscape Architects in 2006.



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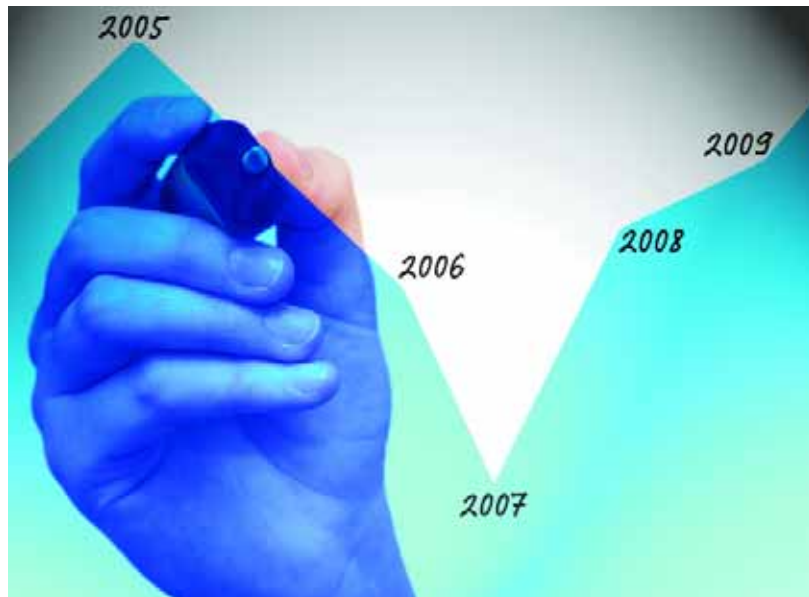
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By Brian Van Bower

Matters of Size



All of us who started our own businesses decided at some point what our companies would be: We chose a focus, set guiding philosophies, developed credos, defined a company culture, settled into a working style and pursued success.

One of the most important calls each of us made along the way had to do with how large or small our organizations would be. In fact, this decision has a lot to say about how *any* business runs and appears to the outside world: It influences the volume of business that can be accommodated, dictates management style, narrows or broadens the organizational structure and ultimately determines the way we perceive what we're doing.

For all that significance and despite the fact that the company size does matter, I've always been aware of how randomly most of us seem to set the scale of our operations: Successful businesses often grow naturally, of course, but too often business owners are caught off guard – and the next thing they know is, seemingly by chance, that they're sitting atop multi-tiered, multi-functional organizations whether that was the intention or not.

modest start

My own business path followed that willy-nilly growth pattern.

I started out all alone, working as an independent pool/spa service technician. At first, I really didn't know what I was doing, but I enjoyed work-

Despite the fact that company size does matter, I've always been aware of how randomly most of us seem to set the scale of our operations.

ing outdoors and *really* enjoyed the autonomy that pool service provided me. Looking back, I probably had no business being in business in those early days, but I worked hard and my list of clients steadily grew.

Eventually, the load I was carrying proved to be too great, so I hired my first employee. I wasn't thinking at all about how large I might ultimately want the business to become: Basically, I was caught responding instinctively to the daily workload.

The business kept growing and I added more and more people to the payroll. Before I was fully aware of what was happening, I wasn't servicing pools myself at all and had instead become a manager.

The operation soon outgrew my home, so I bought an office. To rationalize that extra expense and effort, I figured I should open part of the building up as a retail store. I didn't have a clue about running such a business, but I forged ahead anyway.

As it turned out, not knowing much about what I was doing was something of a blessing: It put me in a place where I didn't worry about making my store conform to what others in the marketplace were doing; instead, I flew by the seat of my pants and based my pricing on what I was paying for products without any reference to what my competitors were charging. I stocked products that sold and winnowed out ones that didn't.

Back in those days, mine was a down-home family operation. I painted the store myself with the help of my two daughters, and I even published an annual company calendar dominated by photographs of my family. It was a quaint way to get things done, but by and large it worked pretty well – and did so for a good number of years.

Continued on page 12

step into color

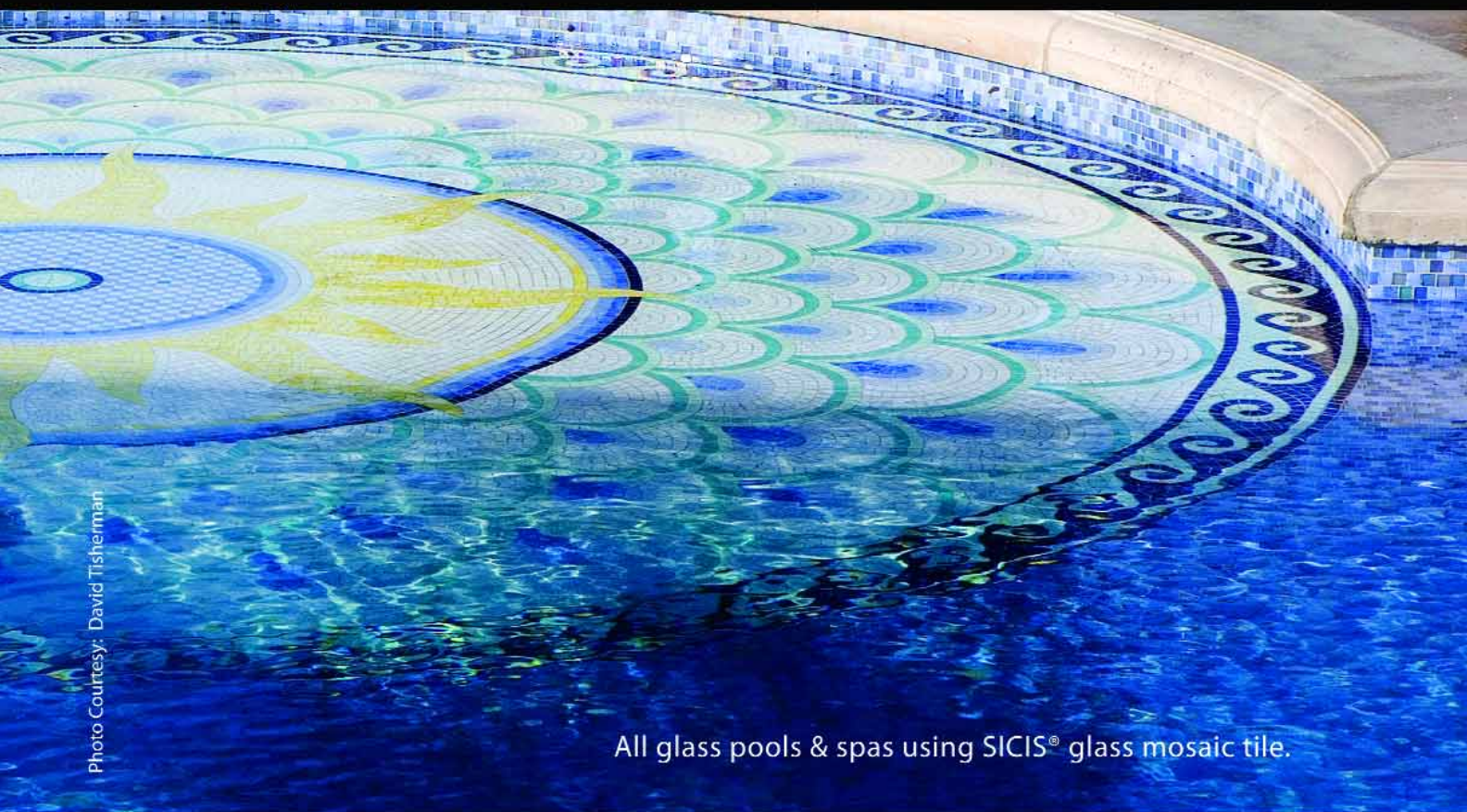


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Before long, things were rolling along well enough that I even opened a second store. I'd learned a thing or two by then and, this time out, purchased durable, quality furnishings and display fixtures, laid down carpet to match and even worked with professional signage.

By that point, I had two stores, 600 service accounts, a repair department and ren-

ovation/construction operations as well. Without much thought or reason, in other words, my one-man band had become a small orchestra with some 20 players.

a revelation

Even at its largest, of course, mine was still a small company – but it sure didn't feel that way to me!

There I was, managing this multifaceted operation and running to keep up with all the things that go along with staffing and training employees, maintaining company policies and paying the bills – and then I had an epiphany.


One afternoon, I heard one of my employees describing me as "rich," and it made me stop and think: Yes, the company was successful and provided me with a modest sense of affluence, but when I considered how much time I was investing in running the business relative to my level of compensation, it struck me that I wasn't making nearly as much on an hourly basis as were some of my employees. Rich? No way!

Having never considered the issue of company size in any deliberate way, I now found myself in a situation I couldn't have predicted or intended. I'd gotten into the business originally because I enjoyed the independence, but now the situation was such that my focus was managing other people and finding ways to make them productive rather than doing what I really wanted to do.

After 20 years, I decided to shift gears and sell my company. That was in 1991, and by that time I'd been doing design work for two years, loved it completely and decided to move wholesale in that direction. All of a sudden, I was now back to being independent – totally free to pursue activities that were proving to be the most satisfying and exciting to me.


The experience of having owned and operated a company that had grown to become far larger than I'd ever dreamed had taught me that the scale of an operation is what determines what its workdays are like for the one who owns it – and then and there I made the decision that whatever else I might do, my business preference would be to stay small.

For several years thereafter, I worked as an independent sales and design representative, living on commissions gleaned from a handful of local companies. That experience gave me extensive insight into the operations of other watershaping companies, and what I observed (after noticing I wasn't terribly happy with the way they performed in the field) is that the root of most of their problems had to do in some way with the fact that none of those



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owners had been deliberate in determining what size was right for the company or managing the growth of their enterprises.

across the spectrum

In its current incarnation, my company focuses entirely on design work and has four on staff, including me. For right now, I'm convinced an organization this size is exactly what I need.

Our work puts us in regular contact with a variety of different firms (watershaping and otherwise) in a wide variety of sizes. Some are sole practitioners, including architects, landscape architects and an array of designers. Others, by significant contrast, are large and even multi-national firms that have a hundred or more employees on staff. (The latter aren't huge by any means, but they're certainly big by my standards.)

Having worked with companies from both ends of the spectrum, I've observed some distinct characteristics that seem to come into play with each on a consistent basis – both strengths and weaknesses.

Recently, for example, I've occasionally been frustrated in working with larger firms. As I've said many times, I love the team concept, but what I've run into more than once is that when a large portion of a team is made up of players within the same company, the structure and bureaucracy of the company itself can bog down the process. More than once, I've found myself in situations where every decision on a project is "by committee," which means that simply keeping everyone informed is a time-consuming proposition – and getting definitive answers can be an ordeal.

Too many cooks really do spoil the broth here: Decisions that can be made in a snap by a sole practitioner can take weeks with some larger firms, even though in theory the big guys should have more resources and should be better at making decisions.

Of course, there are advantages to large companies as well, particularly when it comes to amassing talent and tackling complex projects. They also reward good performance by adjunct professionals like me with referrals, and given the larger volume they can handle, that can be a huge plus from my perspective. They also tend

to be more stable than smaller firms, which can make them valuable allies in times of fluctuating fortune.

From where I sit, it looks as though success in a large company comes from understanding how such organizations should be structured (something that was never a passionate interest of mine) and knowing how to manage multiple departments, offices and crews. My friend Bill Kent, president of the Horner family of companies and its 450 employees, is a natural in those sorts of organizations and his have been extraordinarily successful as a result.

His edge is that he always saw himself at the helm of a grand enterprise and has structured his education and approach to business to accommodate the layers of management and organizational systems necessary to make a firm of that size fire on all cylinders.

scaled back

Of course, Bill's 450-person company is small when you mention it alongside Microsoft or General Motors, but his business is way beyond the scope and scale of my 20-person business of years past and orders of magnitude beyond my current four-person shop. I'm constantly amazed by how he does it.

Tiny firms like mine and the even tinier firms of sole practitioners offer a completely different working profile and set of challenges. For starters, small size means hands-on work for me that would petrify the president of a truly large company.

In my case, however, that degree of involvement is what I crave – and one of the main reasons I'm determined to stay small. Sure, everyone has their own preferences on that front, but on a very basic level I think that being up to my ears in the work, day in and day out, is *much* more fun than managing disparate groups of employees.

Every morning when I sit down at my desk, I get directly to work in designing custom watershapes and communicating personally with clients and the other professionals who might be engaged in any given project. "Management" is for me a trifle compared to the needs of a large firm, because my participation

in the process with my three compatriots is nearly constant.

As suggested above, small firms also tend to be responsive and nimble, simply by virtue of the fact that there are fewer people who contribute to decision-making. This translates to a far more self-driven and self-determined way of doing business that I see as making what we do in my company a more direct reflection of my style and personality.

At the same time, there are drawbacks to small firms. First, if a tiny operation gets swamped, it limits responsiveness and can lead to frustrations just as painful as those you can encounter in working with big companies through various project phases. Second, there's no question that small firms can be far riskier than big ones in financial terms – especially when markets contract in the ways we've witnessed in the past 18 months.

Also, issues of personal performance and reputation are supremely important for small firms, some of which are only as successful as their last and current project. Yes, independence is nice, but this constant focus on the skills and creativity of one or two individuals can be quite a burden. The upshot is an unusual demand for high-level, individual performance in smaller firms, where that same need is distributed across many more shoulders in large firms.

a matter of choice

As I see it, there's no right or wrong path here: Both the small- and large-scale approaches have their advantages and their drawbacks, and the key for us as business owners is to be clear with ourselves about what we're thinking and what it will take to make the selected approach work.

No matter which path you take, of course, you must be ready to face the challenges and find the correct balance between the amount of work you undertake and your ability to deliver at an appropriate level. If you choose to stay small, you get to wear lots of hats and cut your own trail. If you come to think big, then you need to be prepared for the rigors of managing a large organization and establishing expectations and policies that maximize group performance.

One of the wonderful things about watershaping as a business is that it affords us these choices, this great range of possibilities from tiny to immense. When you stop and think about it, that freedom of choice is wonderful in the way it gives us the opportunity, each according to need and ability, to do precisely what makes us happy. **WS**

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

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By Bruce Zaretsky

Learning to Say 'No'



Have you ever turned down a client who really wanted to work with you and you alone?

It's a hard thing to do, which is why most of us have found ourselves at one time or another saying "yes" despite the fact that we believe something the clients want simply cannot be done or, more important, that we've developed serious doubts about them. Just at that point where we really need to sit them down and tell them to go away, many times we'll freeze – and here's the usual reason why: "If I tell them 'no,' then they'll just get someone else to do it and I'll lose the job!"

Giving in to this fear of losing a project and letting apprehension guide our decisions in place of any faith we might have in our common sense or experience is just asking for trouble – but too often we go ahead anyway, things don't work out and we're left holding the proverbial bag. We *knew* there wasn't any hope, but we forged ahead anyway for the sake of keeping a job.

I don't know if you'll admit that this has happened to you, but I'm willing to go on record saying it's happened to me more times than I'd care to count. But that's no longer the case: It took some doing, but I've learned to say "no."

In my first *WaterShapes* column, which appeared in the August 2007 issue on page 16, I argued for finding ways to inject quality into every step of the

Giving in to the fear of losing a project and letting apprehension guide our decisions is just asking for trouble.

design/construction process, no matter the size or scope of the work. Experience has taught me that a huge part of making the grade has to do with working effectively with clients.

When you've reached a point where a healthy rapport is impossible, you're only undercutting your best intentions and will likely be stuck with a client who will dog your efforts every step of the way. In that light, being able to say "no" may be just as critical to maintaining high standards as having the skills you need to get the job done!

stand your ground

For all my glib resolve, however, I concede that saying "no" is one of the toughest things I do. Yes, I'm in business to complete jobs and pay the bills, but I've always known that the real reason I'm in the watershaping and landscape business is because I love what I do: Ultimately, it's more about art and far less about money.

Nonetheless, we have suppliers, employees and insurance agencies to pay: It's this need to do enough work to sustain operations that gets us into trouble and inclines us to stay in situations our instincts tell us to abandon.

Say a potential client calls, and even though I've heard through the grapevine that he hasn't paid two other companies in the area, I still go after the job because it's a big one that might generate recognition and referrals – and then I get stiffed and still have bills to pay. It's a classic case in which both artistic and pragmatic aspirations are drowned by a nasty outcome, and it doesn't take too many experiences like that one to teach you how to say "no."

At my company, we've turned away lots of undesirable clients through the years. Our main tool is a carefully worded "go away" letter in which we tell clients in brief but certain terms that we are unable to work with them

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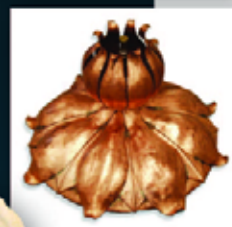
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on their project at this time. (See the sidebar on page 20 for a pair of model letters.) Reasons for our decision are rarely given: We won't bring up the fact that they seem incapable of paying their bills, nor do we share the fact we've heard they're awful to work with. We simply say, "no, thank you."

If they are truly the bad apples reports

make them out to be, they usually just move on to the next company and forget all about us.

Recently, for example, a prospect called us to discuss a large project. I'd heard she was a handful and had already had another company remove an entire paved driveway because it wasn't exactly what she expected. She took "full responsi-

bility" for the situation and had that company complete close to \$500,000 in work, then had her husband try to negotiate the price down.

I heard all the details when I called a friend and colleague at that company to gain some first-hand insight. The result: I sent the clients a letter informing them that I could not help them at this time. It was short and sweet, I never heard from them again – and we did not starve from the lack of work.

lessons learned

Another case in point: We were called in about repairing a natural pond and spillway on the site of a very old, urban condominium complex. I was excited at the invitation and had a great meeting with a representative for the complex who also happened to be the head of the homeowners' association. He liked my ideas and gave me a verbal commitment.

A while later, I stopped by the site to gather a bit more information and fine tune my proposal. While I was there, two other residents of the complex approached me and asked me why I was suggesting doing things "this way" and wondering in strong terms why I wasn't thinking of doing it "that way."

Clearly, they were not happy with what had been proposed and let me know that they, too, sat on the association board. My sense is that they felt they had some degree of control over the money end of the project and thought that my price (which was just about double that of another proposal from a contractor who had no experience with this type of project) was just too high.

I explained myself, left the site and, soon thereafter, called my initial contact to tell him I was no longer interested in the project and wouldn't reconsider without the full and unanimous support of all members of the board. He promised me that there would be no problem with the other homeowners or with getting paid, so I agreed to another on-site meeting.

We all met and my comfort level did not change, so I backed out. It took numerous e-mails back and forth for him to accept the idea that my "no" was final. In fact, he contacted me so many times

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on the level

that I was beginning to feel as though I were being stalked – an experience that confirmed my suspicions that I would be better off not taking on a job with this particular set of clients.

A few years ago, another situation occurred in which my partner, Sharon Coates, became extremely uncomfortable with the way a client was dealing with her. He spoke in a condescending manner and

basically treated her like a second-class citizen, and Sharon couldn't help noticing during our discussions that he dismissed his wife in much the same manner.

Sharon sent them a "go away" letter and returned the deposit. The husband called, apologized profusely and begged Sharon to resume her work. She reluctantly agreed, met with them again and revised the proposal at his request. He then canceled the job, wasting more of our valuable time and confirming our feelings about working on the project.

model letters

Often, simple letters that stick to the point and don't point fingers are the best way to say "no." Here are two samples of letters we use at Zaretsky & Associates, ready for use. The first is straight to the point, no reasons given:

Mr. and Mrs. Homeowner:

Thank you for your interest in Zaretsky & Associates, Inc. Unfortunately, at this time we are unable to help you with your project.

Good luck now and in the future.

Sincerely,

*Bruce Zaretsky
Zaretsky & Associates, Inc.*

This second letter is one we use in communicating with problem clients:

Mr. and Mrs. Homeowner:

When I work with clients on a project, we typically build a rapport and sense of mutual trust rather quickly. For whatever reason, this connection has not been established between us, and I am uncomfortable in pursuing our working relationship. Therefore, I will not be able to work with you on your project and am returning your deposit check to you.

I hope that this has not created too much inconvenience for you, and I wish you luck now and in the future.


Sincerely,

*Sharon Coates
Zaretsky & Associates, Inc.*

follow your instincts

Despite experiences of this sort, most of us feel the pressure to say "yes" as a matter of operational practicality, but the simple fact is that saying "no" will not cause your business to plunge toward bankruptcy: In fact, saying "yes" to the wrong client in the wrong circumstances will push you in the direction faster and more surely than saying "no" ever could.

This is why I put so much credit in my instincts – and why I spend a good bit of time communicating with colleagues and vendors in my market area about what's going on locally. I've never seen other firms in my area as my enemies; in fact, I count many of them among my friends and best business allies and much prefer seeing them as colleagues rather than as competitors.

On the all-important client front, however, it's all about comfort level and reaching a stage where you simply refuse projects that aren't a reasonable fit. In that respect, it's something that comes with the territory for business owners: If you manage to keep your emotions from taking control, learning to say "no" will actually keep you going! 

Bruce Zaretsky is president of Zaretsky & Associates, Inc. a landscape design/construction/consultation company in Rochester, N.Y. Nationally recognized for creative and inspiring residential landscapes, Bruce also works with healthcare facilities, nursing homes, hospitals and local municipalities in conceiving and installing healing and meditation gardens – and labyrinths, too. You can reach him at bruce@zaretskyassociates.com.

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By David Tisherman

Keeping Watch



I'm always amazed when I hear other watersheders complain about inspectors.

As I see it, those professionals provide a valuable, extra set of eyes on site – eyes with an expertise that helps me make certain a project is being installed as engineered and specified. In essence, inspectors are a sort of insurance policy against problems both at the time of the inspection and down the line.

In the last several “Details,” we’ve systematically followed the design and construction process and, last month, discussed the installation of steel and plumbing in anticipation of the arrival of the shotcrete or gunite crew.

Whether it’s required by the local jurisdiction or not, I *always* invite a deputy inspector to be on hand for the shoot to watch what happens relative to the engineering plans and observe basic issues of workmanship. I do so because the shoot is an absolutely critical project stage – our last chance to make adjustments and corrections that can ensure the long-term structural integrity of a watershed’s shell.

I’m there to meet the inspector first thing in the morning, and I don’t leave the job site until every bit of steel is covered and every detail addressed, from cutting

As I see it, inspectors are professionals who provide a valuable, extra set of eyes on site – eyes with an expertise that helps me make certain a project is being installed as engineered and specified.

notches for overflows to making absolutely certain there are no broken pipes.

To provide all of us with a clearer sense of what inspectors do and how they do it, I’ve invited deputy inspector Richard Fehring to write the rest of this month’s column. It’s an eye-opening discussion – one that defines in ways I never could the importance of what inspectors do in support of watershedding.

– D.T.



As a deputy inspector for the County of Los Angeles, I see my job as one of protecting a project engineer’s work as well as the interests of the contractor and the homeowner.

I’m there to make sure that all the work I’m inspecting is done to code and that the pool or other watershed structure has structural integrity. Some people tell me I have the easiest job in the world, because much of the time it looks like I’m just standing around. Yes, I do tend to keep a low profile on a job site, but every second I’m there, I’m carefully observing a host of significant details.

When I notice something and bring up a problem, I’m aware that this can be frustrating for a contractor and that some degree of irritation on his or her part is a normal reaction. But what I’m catching are mistakes that need to be corrected; otherwise, my aim is to be unobtrusive and stay out of the way.

Generally – and despite the fact some contractors have a tendency to question what I do – my desire on the job site is to be helpful, supportive and constructive.

Continued on page 24

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long days

On the day of a shoot, I generally arrive on site a bit early – usually 30 to 45 minutes before anyone else comes on the scene.

The first thing I do is make sure the contractor has left the appropriate permit in the permit pouch, ascertain that the city inspector has been there and

signed off on everything to that stage and determine if, in legal terms, the pool is ready to shoot. If the paperwork's in order, I'll walk around the pool and recheck everything – grades, rebar sizes, clearances and any of a number of other details that catch my eye.

I always examine the steel, for example, making certain first of all that it's been in-

stalled per the structural plans. If the city inspector has signed off on it, I know that it was very likely correct at the time of the inspection, but sometimes things happen between the time he or she leaves and I get there. One common problem: Quite often, there's no longer adequate clearance between the steel and the dirt, in which case I'll ask the contractor to insert more spacers or dobies to re-establish spacing that will ensure proper encasing of the steel in the shotcrete.

I then check to make sure that all of the steel and any other metal components are properly grounded with UL-approved clamps. City inspectors are not infallible: They do occasionally miss important details such as this, and it's my responsibility to rectify the problem. This is of obvious importance, as nobody wants to see anyone get electrocuted when he or she jumps in the water!

Next, I'll visit the equipment pad and check the plumbing pressure on the gauge, making certain it stands at about 35 to 40 pounds per square inch in every case. I'll make a note of these readings so that later on, during the shoot, I can recheck to make certain the pressure stays the same. If there are fluctuations, it typically means there's a leak somewhere – a rare event, but one I watch for nonetheless.

Finally, I check to ensure that the site is physically ready for the shoot, with clean rebar, no debris and no stray parts lying around. This is important, because a lot happens on site between the city inspection and the shoot. Plumbers, for example, sometimes cause a good bit of dirt to slough off walls in laying and securing pipes – an occurrence that can compromise clearances.

If small issues such as these aren't addressed before the shotcrete crew shows up, it means they'll have to stop and police the site themselves – a waste of valuable time and money. Worse, if no one takes care of this last-minute cleanup, then the pool shell won't be properly installed and there could be structural problems down the road.

proper supervision

Therein stands a key point: Not only is it important that I show up early to run through this set of details, but it's also vi-

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I arrive on site on the day a pool or other watershape is to be shot a good 30 to 45 minutes before anyone else. My first task is making certain all of the project paperwork is in order and the watershape is legally ready to go.



Before the shoot begins, I also examine the physical layout of the watershape, making certain the steel has been set up according to plan and checking to ensure that there's adequate clearance between the steel and the dirt to allow the crew to encase the steel properly.

tal for the contractor to have someone on site to deal with these sorts of issues when I raise them.

Dealing with my observations is critical enough, but what happens without this level of on-site supervision is that key decisions are left to the shotcrete crew. For instance, there are almost always questions about step detailing and any number of

other basic dimensional issues: If a responsible party isn't on hand, the entire process slows down and can even come to a complete halt.

As I see it, the shotcrete subcontractor should never be left to make what are, after all, real design decisions. Principles of sound project management require the contractor to be capably represented

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on site when a watershape shell is shot, but unfortunately that doesn't always happen – and substantial problems are often the result.

In even more pointed terms, it's not the shotcrete subcontractor's responsibility (or mine) to serve as an intermediary with the client. Homeowners often have questions while the pool is

being shot: The subcontractor is mostly too busy to answer them – and so am I – at a time when there may be need for significant communication.

And on those occasions when I see a problem that needs to be addressed – say if an extra piece of steel is needed in a step or in a dam wall – I'm not going to raise the issue with the shotcrete subcontractor.

preferences

It's not my place to dictate what materials are used on any given watershaping project, but as I mentioned in the accompanying text, I prefer working on projects having shells made with shotcrete rather than those done with gunite.

After inspecting more projects than I care to count through the years, I've come to appreciate the significant differences between these two types of pneumatically placed material – and I must give shotcrete the edge.

So what's the difference? Technically speaking:

► **Shotcrete** is made by way of an engineered mix designed at a batch plant. It's precise, comes ready-to-apply in the truck and is extremely consistent in its content of cement, sand and aggregate. As the name implies, it's pneumatically shot into place.

► **Gunite** requires a far more complex on-site operation in which loads of sand and cement are skip-loaded into a huge mixing machine that looks like a calliope and spews diesel fumes. It's messy to start with, and if there's any wind at all, the material will migrate all over the street, the clients' yard and neighboring properties.

As I see it, the advantage of shotcrete is that there's less room for error. With gunite, you have one person controlling the mix and another working the nozzle controls, and both can jumble things with ease.

In more direct terms, gunite jobs are so complicated that they require *two* inspectors, one back at the gunite machine watching the mix, the other watching the nozzle operator as he (and it's almost invariably a man) controls levers for air, water and the material – and that control must be *precise*. By contrast, shotcrete has a control for air, and there's no way to foul up the mix.

Many operations effectively install pools using gunite, but in my view, it's simply more of a challenge than it should be.

– R.F.

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tor or his crew: Instead, I need to speak with the contractor, and having someone on site facilitates an immediate response to issues that can eat up time and money.

It's always been my contention that the contractor (whether it's a general contractor, a pool contractor or an owner/contractor) needs to be there on the job site and make certain that each sub-

trade does its bit to maintain a clear, clean job site. It's been my observation that, when things go wrong, problems will tend to snowball and bury any profit a job might yield.

This is why contractors need to take care in selecting subcontractors. It's also why I'm such a strong advocate of having project meetings before a job starts so

that everybody who will be working on the project's construction team knows exactly what's expected.

The proof really is in the pudding: Within a few minutes of being on site, I can tell if crews are good because of the way the fundamentals have been handled.

making way

By the same token, there are occasions when things are obviously wrong and need to be addressed before any shotcrete is applied.

Proper form elevations, for example, can become a big issue. All too often, a shotcrete crew will show up to find a pool out of square and with incorrect elevations. These are not issues they should need to address upon arrival on site: Dealing with them involves delays and results in a mixer truck that shows up at 7:30 a.m. sharp sitting there for a costly hour or two before shotcrete application can begin.



After making certain the mix design is the one specified for the job at hand, I observe the shoot and keep a watchful eye on the nozzle: I'm always on the look-

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Basic site access is another issue that is too often overlooked until the day of the shoot. It's common to find cars in the way of mixer trucks and pumping rigs – something that should have been addressed by the contractor well ahead of time with the homeowners and their neighbors.

If there's no room in the driveway and limitations in street access makes it tough for mixer trucks to come and go, the hassles multiply and the day fills with frustration. And it has rippling effects, upsetting the homeowners and their neighbors as the contractor does whatever it takes to clear the way. The issues may be easy to address, but dealing with them consumes both time and money.

When the shotcrete crew shows up, my first job with them is to check the mix design and make certain the right batch has been delivered to the right address. Again, this is an extremely basic thing, but it can

be a huge problem when things go wrong. I'm also aware of the operational distinctions between gunite and shotcrete, and my preference has always been projects that involve the latter. (For more on this, see the sidebar on page 26.)

Once the crew is set up and we're sure everything is as it should be, the application process begins and I become an at-

The proof really is in the pudding: Within a few minutes of being on site, I can tell if crews are good because of the way the fundamentals have been handled.



out for good coverage of the steel, the angle at which material is being applied and the pattern in which the nozzle operator applies it.

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tentive observer. My main concern is the nozzle: It should be held approximately perpendicular to the surface and never at any angle greater than 45 degrees off the perpendicular because that tends to create a sort of folding action in the shotcrete that traps rebound. There are, of course, certain situations in which access around complex details is an issue and there's no other way to shoot portions of a shell other than by holding the nozzle at an off angle, but as a rule that's not an acceptable application technique.

I'm also looking to be sure the nozzle is being moved correctly, typically in a series of small circular motions. If the nozzle is waved too quickly, it changes the angle of impact, increases overspray and leaves a rough texture on the finish work. I'm also always looking to make sure there's good overall coverage – at least three inches over the steel with good compaction with the material.

As the day progresses, I'll continue to check mix designs as new trucks show up

and generally do what I can to make the process unfold smoothly.

end of the day

When the work is done, I write a report for the pool contractor and the city inspector that carefully details any problems I've seen and corrective measures taken. If everything's been done correctly, these reports are short, but usually I find a couple points worth discussing, large or small.

As a final on-site step, I make sure the contractor has provided for keeping the shotcrete wet, whether it's through having the homeowners do it, setting up a system of drip hoses or assigning someone to return to the site to take care of things.

None of this process, end to end, should be unfamiliar to contractors, all of whom should be well versed in the American Concrete Institute's standards for pneumatically applied concrete (ACI 506-R 95). This document defines all aspects of

shotcrete installation for swimming pools, including workmanship, mix designs and strength.

If you follow those guidelines and take care of the basic concerns I've described here, your projects stand a fair chance of making it through the shoot without a hitch.

– **Richard Fehring**

Richard Fehring is a licensed and registered deputy inspector for the City and County of Los Angeles. 

David Tisherman is the principal in two design/construction firms: David Tisherman's Visuals of Manhattan Beach, Calif., and Liquid Design of Cherry Hill, N.J. He is also co-founder and principal instructor for the Genesis 3 Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction. He can be reached via e-mail at david@tisherman.com.

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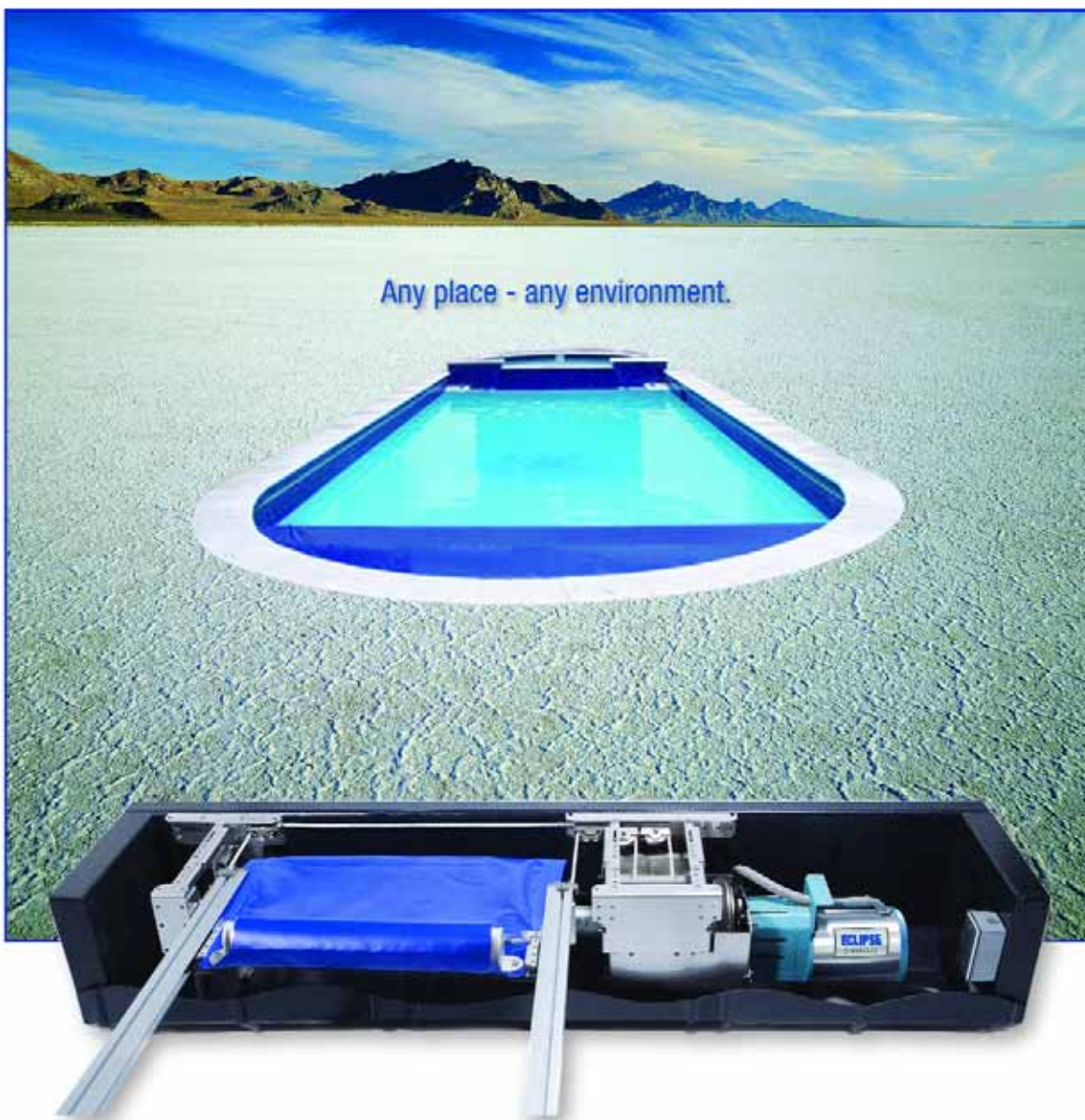


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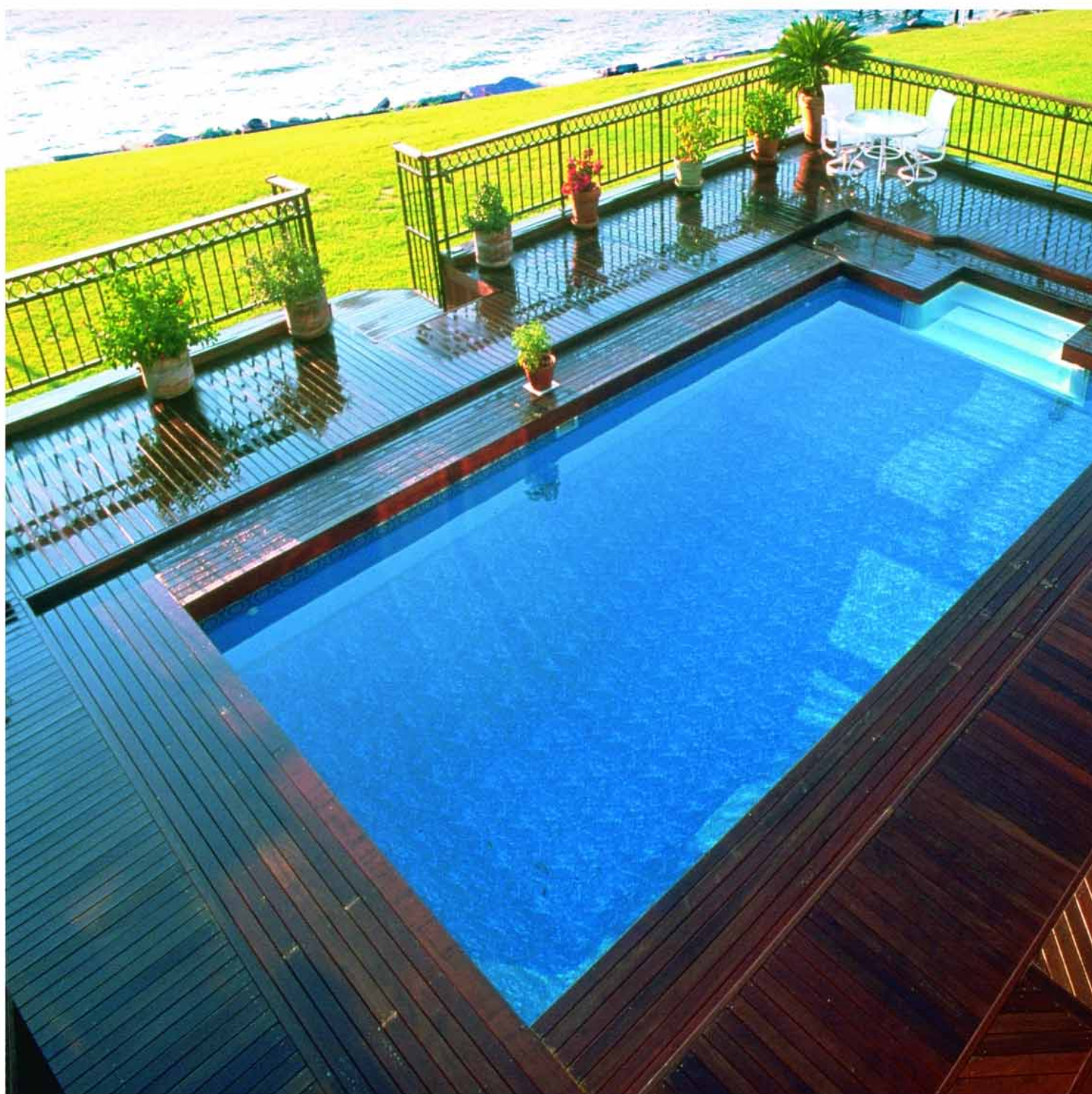
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Teaming Perfection



Every great watershaping project involves a measure of design inspiration followed up by an equivalent measure of excellence in execution. In some cases, notes watershaper Brian Van Bower, a single entity or person drives both processes, but it's increasingly common these days for superb projects to be the result of a team effort – a collaboration among architects, designers, contractors and subcontractors aligned in pursuit of a shared goal.

By Brian Van Bower

Some projects start out on the right foot and stay that way:

the right client, the right ideas, the right combination of skills on the design/construction team and a setting that inspires everyone involved to bring his or her very best to the table.

The project profiled here is a case in point and is very specifically an example of teamwork at its finest. The result is a tasteful design executed to near perfection in a project that's beautiful visually while being extremely functional through the fun and luxury it affords the clients. All in all, it's one of those rare and wonderful projects in which all the right notes were hit.

Located on an island off the coast of Connecticut, the property is a second home for a fun-loving family that had the resources to create a great venue for outdoor gatherings. The site is indeed spectacular, with seven acres in all graced by a beautiful 12-bedroom house and stunning views of the Long Island Sound. It was one of those spots that cried out for a design suited to its scenic beauty.

starting points

The homeowners heard about me from clients I have on St. John in the U.S. Virgin Islands. They were all chatting during a party when my former clients recommended me as one who might design and oversee the renovation of the Connecticut home's existing pool and surrounding deck area.

I was contacted shortly thereafter and soon made the trip to the island for a meeting. I stayed overnight, inspected the pool, walked the island and began raising various ideas and possibilities.

They indicated at first that they were satisfied with leaving the pool alone and were mainly interested in reworking the deck area, but once we rolled through the portfolio of images on my laptop computer, they became excited about the notion of re-

working the pool as well. They were particularly intrigued by images of knife-edge, perimeter-overflow details – and *stayed* that way even when I explained that such systems require significant design and construction effort and would require a complete remodeling of the existing pool.

The old, rectangular pool sat on a raised wooden deck that cantilevered out over the rocky shore. It had a nice offset step detail and a fiberglass spa sunk into it, but overall, the deck was slightly stretched and bowed out of shape. It also featured an intrusive box/track system for an automatic cover at one end as well as a basketball hoop on the side. As they explained, the pool had hosted many a family gathering and was used primarily for play.

Any eyesore factors were mitigated by the fact that the pool area couldn't be seen from inside the house. The pathway leading to it ran through a lovely area landscaped with flowers and rockwork, but it was clear the clients saw the pool/deck area as a utilitarian place intended for spring and summer parties rather than as a beautiful destination. For them, in other words, the space to that point had been all about recreation rather than the visuals.

But I have to say the existing pool wasn't all that bad visually. It had direct, simple lines and in fact served the space well. But operationally, it was an altogether different story: The equipment pad was set uphill in a little shed, and a simple inspection revealed that the original contractor wasn't up to par with respect to hydraulics or technology: flex pipe (laying mostly aboveground), no automatic sanitizing system, no auto-leveling device – none of the features you'd expect to find on a pool for this type of property.

The pool's structure was unusual as well, made up of a com-

bination of a concrete floor and steel walls capped with a concrete beam. It didn't leak and appeared to be structurally sound, but it was something of a puzzle and left me wondering what the original contractor had been thinking.

complete revision

For a brief time, we'd talked about keeping the odd shell and simply altering it to include some sort of lounging area and a water-in-transit detail, but as we considered the technical challenges presented by this notion, the possibility seemed less and less practical. Before long, I suggested that we needed to rip out the old pool completely and start fresh, and the clients ultimately agreed.

In effect, what had started out as a basic deck renovation turned into a pool remodel before morphing into a completely new project. The potential effects of this new work on the property led the clients to call in their architect, Nelson Denny of Hadlyme, Conn. He had worked with them on past projects and proved a fine collaborator as we developed a preliminary design that incorporated various ideas from our conversations to that point.

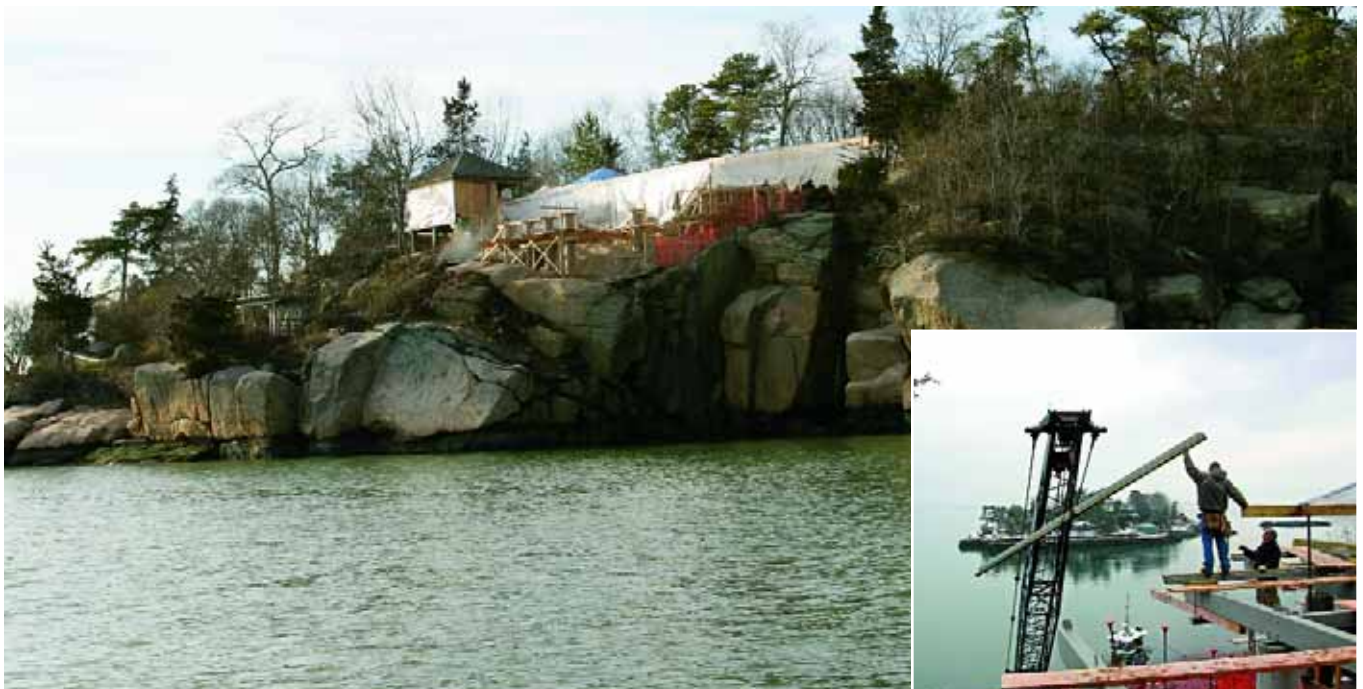
Ultimately, we agreed that the pool should stay in roughly the same location and should still be a rectangle, but we expanded its size to 47 feet long by 20 feet wide and included a range of new features, including a large in-pool lounging area, several umbrellas in and around the water, a raised concrete spa, completely reworked equipment and a new floating cover.

We went with a floating cover to avoid having tracks on the new deck, which was made using Ipé, a tropical hardwood of incredible density and durability. We didn't want any visual distractions on the deck surface itself, so the choice of this material was ideal, because it involves tongue-in-groove construction using anchors that can't be seen – hence no visible deck screws or nails or even wooden plugs.

The refashioned deck also cantilevers out farther than did the original, providing more area around the pool and taking even greater advantage of the views. (As it turns out, the old pool was built closer to the property line than is currently



The setting is utterly spectacular, but the existing pool environment didn't quite stack up to the family's needs or expectations. At first, their aim was to revamp the deck system, but before long the pool was slated for remodeling – and then complete removal and replacement.



The project offered immediate and substantial challenges with respect to schedule and location. First, the desire for an early-spring completion date meant we had to tent the construction zone to keep workers out of the elements through a long, cold winter. Second, the island location meant everything had to be floated in on barges that would drop anchor at the base of the rocky shore and convey materials up to the job site.

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allowed, but the architect worked patiently with the local building department and was able to grandfather the new structure onto the same basic footprint.)

The perimeter overflow operates on three sides of the new pool – at one end and along both long sides. The deck rises above one end of the pool, giving us a convenient place to hide the vault and a cover supplied by Aquamatic Cover Systems (Gilroy, Calif.). Aquamatic's staff did a fine job of overseeing all details related to that aspect of the project.

A seven-foot-wide, shallow lounging area now transitions to a step-and-bench detail leading down to a three-and-a-half-foot-deep shallow area. The floor then slopes gradually to a center area that's five feet deep, rising again on the opposite end to a four-foot depth. On the upper deck level, the inground concrete spa has 33 therapy jets and is connected to the pool (although it doesn't seem that way) so both vessels share the same circulation system.

challenging installation

The island location meant that everything had to be shipped across the water on barges. That could have been a real hassle, but general contractor Nick Fischer and his crews handled everything seamlessly, making certain every component was where it needed to be when it needed to be there.

The timeline could have been an issue as well, because the clients wanted everything to be ready for a season-opening party in the spring. Fortunately, the participating contractors all were familiar with cold-weather work, and we constructed a large, heated tent over the job site so the workers could keep going despite the harsh winter weather. The wind and rain were intense at times, but everything kept moving forward with no discernible hitches.

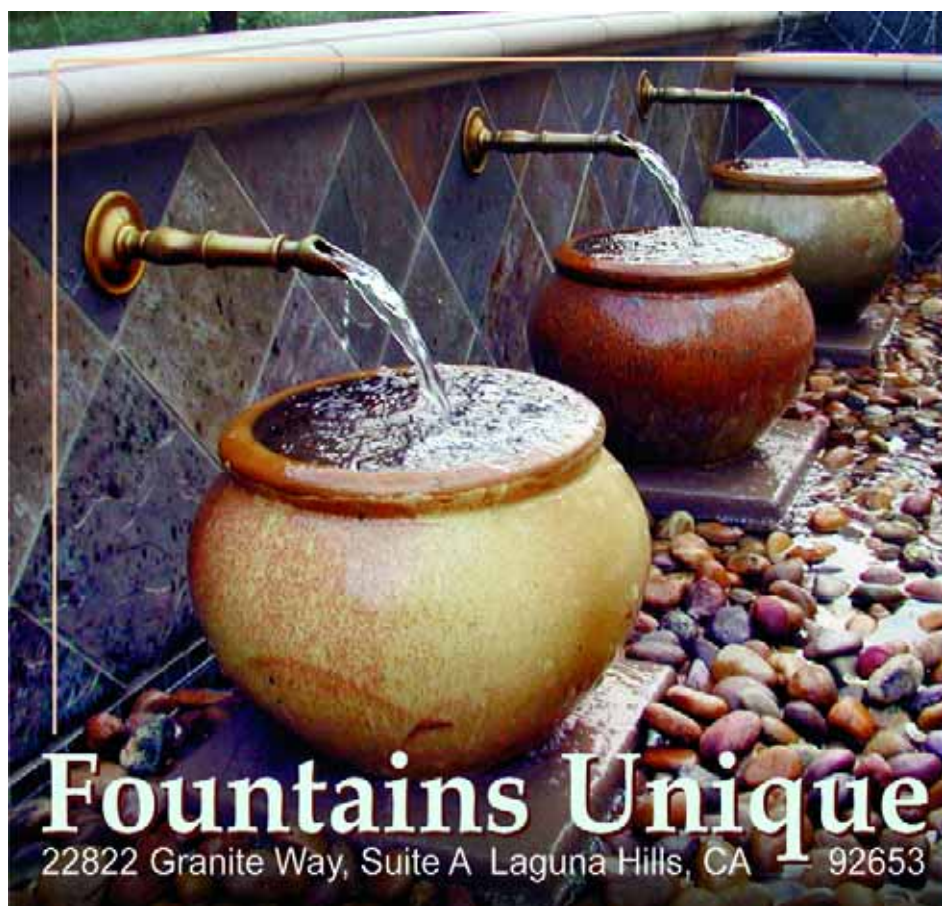
Pool construction was handled by Bob Hinchcliffe of Crystal Clear Pools in Guilford, Conn. He'd never installed a perimeter-overflow system of this kind

before, but despite my initial concern on that point, Hinchcliffe and his crews did a great job, always asking questions and seeking guidance where they needed it throughout the project.

They took to heart the fact that the edge had to be absolutely perfect to make the perimeter-overflow effect function properly and basically did what it took to get everything just right. They were responsive at every turn and never sought to cut corners – a problem that almost invariably arises when a contractor is working off someone else's plans.

Throughout the entire process, there was a great deal of give and take among the homeowners, the architect, the pool contractor, the general contractor and me. Without exception, everyone performed at an extremely high level and was refreshingly pleasant about the process from beginning to end, no matter the difficulty of the challenges or the critical nature of the discussions.

Fischer's crews worked so completely



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hand-in-hand with Hinchcliffe's, for example, that it reached a point where Fischer's people did portions of the forming for the pool and Hinchcliffe's did some of the concrete work for the deck's support columns.

eyes on the prize

As is often true in teamwork situations, careful (and collective) supervision was the key.

General contractor Fischer (or his superintendent Jeff Haines) was on site constantly, for example, and paid close attention to every detail, making certain at each step that the plans were being followed to the letter. Architect Denny was also a steady presence, constantly checking and rechecking details, and I was on site often during construction, making certain that tolerances were being met and that the complex hydraulic systems were accommodated precisely and effectively.

As an example of the extent of our cooperation, the perimeter-overflow system required a precise plumbing detail in which the six-inch trunk-line pipe was to drop gradually by one-quarter-inch per foot along the length of the pool as it moved toward the collector/surge tank. To be certain this key detail would be installed precisely, Denny did a site survey ahead of time and marked the exact levels where pipes should be – and then fol-



It was the first time the pool contractor and his crews had ever worked on a perimeter-overflow system of this kind, but with the steady support of the general contractor and my supervision, everything including the crucial, sloping, six-inch trunk line for the overflow detail was placed perfectly – just as specified. The same care and precision also marked the work on the substructure for the dramatically cantilevered deck.



The Ipé decking went down beautifully with a system of clips that leaves the top surfaces completely unblemished. That's a laborious process, but it was nothing compared to the work that needed to be done with the blue-stone coping: The material arrived slightly out of size and required some careful trimming, but portions of the undersides of the stones also had to be cut away to accommodate the hardware of the cantilever support system.

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lowed up with Hinchcliffe and his sub-contractors to make certain everything was communicated clearly.

The project also features a beautiful bluestone coping. It was to be cut to exact dimensions, but we discovered upon its arrival that it hadn't been sized properly. To save time, we elected to re-cut the material on site despite the fact there was a precise undercut angle to be met and that we also had to cut channels on the bottom of each piece to accept the support system.

This was a tedious, labor-intensive remedy and could've been a huge problem, but we all rallied and worked together to handle it and get the job done. The same attitude prevailed in handling the typical concrete detail on top of the perimeter-overflow edge: It had to come to a precise point, which meant concrete coverage over the rebar at that location wasn't as thick as it normally should be. This meant we had to use stainless steel rebar at that location.

Denny also designed an extremely



Compact, quiet and efficiently organized, the new equipment vault is off in a corner tucked under the deck – well out of sight and mind. Up to date technologically, fully automatic and remotely controlled, the new system is a far cry from the primitive equipment set that limped along in support of the original pool.



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complex stainless steel support system for the cover vault. This was important because it enabled us to minimize the space occupied by the vault while maintaining a concealing cantilever. He also designed a custom, roll-away basketball stanchion so this important play fixture wouldn't be a permanent affair.

The pool itself was finished with a gray Pebblesheen material from Pebble Technology (Scottsdale, Ariz.), and we added some bluestone tile details inside the throat of the cover box and on the angle of the knife-edge. We used the same stone tile to finish the spa's waterline.

wind-resistant

The project team eventually worked its way around to scores of finish details. In one case, we had long been thinking of using glass panels in a railing system for the far side of the deck but had second thoughts because the wind-driven salty spray off the sound would have made the panels a maintenance nightmare.

Denny took the lead here, researching various options and ultimately developing a custom system of stainless steel mesh panels and specially finished supports that won't oxidize. It's a great-looking system – extremely transparent but possessed of a uniquely sculptural appearance.

The aforementioned wind also posed issues with the umbrellas we wanted to use. With a bit of legwork, we found a sailboat-rigging company that built the uprights and umbrella structures for us – and topped them with a special fabric designed to hold up in high winds.

Last but far from least, we replaced what had been a pathetic equipment set with topflight products, including a 350,000 Btu High-E heater from Jandy Pool Products (Petaluma, Calif.); a salt-chlorine generator from AutoPilot (Fort Lauderdale, Fla.); a Total Eclipse corona-discharge ozone generator from DEL Ozone (San Luis Obispo, Calif.); a K-2000 water-leveling unit from Levolor (now owned by Jandy); three filters – one on the main circulation system and two on the perimeter-overflow system and all from Jandy; a 5EQK-500 spa pump from Pentair Water Pool & Spa (Sanford, N.C.); and a three-horsepower circulation pump from Jandy.

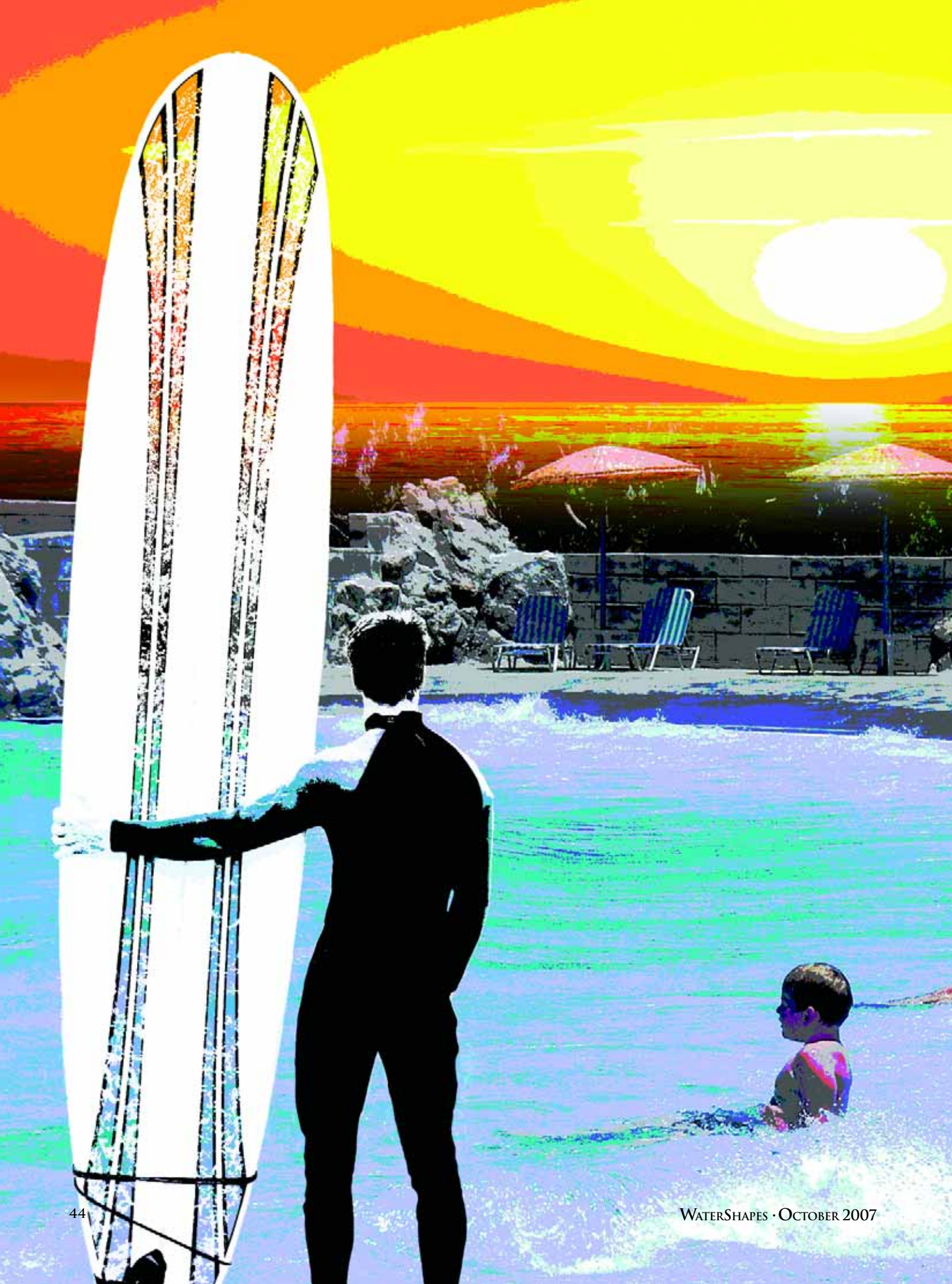
The entire array is managed by a Jandy control system and is housed beneath the deck in a new concrete vault engineered to minimize noise.

From end to end, this is a project that represents quality in every detail and exemplifies exactly the sort of teamwork so often discussed in the pages of this magazine. It's a worthy principle – and goes hand-in-hand with quality design and execution in making projects like these come to pass with all the excellence these homeowners deserve.

The cantilevered decks make a dramatic visual statement from below that's fully supported up on top of the cliff, where the new pool, spa and deck are ready to meet the family's desire for a space that serves both recreational and entertainment needs. The look is consistently modern throughout, from the neat lines and angles to the shallow lounging area, the umbrellas, the floating cover and the railing system.







Cresting Waves

By Andy Tymiak



Wave pools have become a mainstay of waterpark environments in the past four decades, providing visitors with a dynamic experience that once could be found only at ocean beaches. Here, Andy Tymiak of Whitewater West describes what makes these waves roll, reviewing basic wave-pool technology, system functions, vessel configurations and creative factors involved in designing and installing these spectacular, crowd-pleasing watershapes.

The idea that someone can enter a manufactured body of water and go surfing is both exciting and a bit mind-boggling. Perhaps that's why, as is the case with many a good idea, there's more than one claimant to the distinction of having built the first-ever wave pool.

Most people in the know trace the origins of these vessels to the early 1970s, and I know for certain that we at Whitewater West jumped into the game early on: The company became involved in its first wave pool a few years after opening its doors in 1981, and to date we've been involved in installing many of the hundreds of systems that now grace aquatic facilities across North America.

As waterparks work to distinguish themselves, wave pools have become more elaborate when it comes to both themes and aesthetics. In fact, in the 17 years I've been working on wave or surf pools for the company, I've seen these vessels grow dramatically both in popularity and in the level of the technologies and design details that make them work.

Their crowd-pleasing ability has always made them important to waterpark owners. All it takes is watching what happens when the horn sounds to signal the activation of the system and hordes of excited children rush into the water. (For



safety reasons, wave pools operate at intervals to give bathers time to rest, so anticipation rises as park patrons wait for each new session to begin.)

In addition, wave pools provide mass entertainment. Where attractions such as waterslides make everyone wait in line, once a wave pool starts, anyone can wade in and try to catch a wave with or without the assistance of a flotation device. Indeed, a large wave pool can accommodate *hundreds* of people at a time, thereby relieving pressure on lines and crowds at other attractions and making the whole park more fun for everyone.

Driving Forces

Compared to most other park features, wave pools are typically large bodies of water and boast large beach areas beyond their fringes that enable even those who don't ride the waves to lounge outside the water and watch the fun. As such, they occupy a good slice of real estate and the structures themselves are large and complex, which often makes them the largest investment a property owner will make for any one type of feature.

Not all of these features are huge, of course. In fact, there's a wide range of available systems these days, some generating small waves in which bathers do little more than bob around in undulating water, others capable of generating large, breaking waves that are suitable for actual surfing. Throughout the world, this involves two basic technologies:

► The first (and by far most common) is the *pneumatic system*. Here, air is blown into chambers set at the deep end of the pool. These chambers have un-



Wave pools come in a variety of shapes and a wide range of sizes. Some are indoors, others outdoors, and many are fan- or tree-shaped – forms that effectively allow the water's energy to dissipate as the surge moves across the pool (A, B). Maximizing the fun, several facilities now boast dual-wave systems where one side is devoted to board surfing, for instance, and the other to bobbing and floating (C).

The shape and slope of the vessel are determining factors in the sort of waves any given pool can produce. In some cases, designers tailor the action to board sports – that is, boogie boards and surf boards – while in others, the aim is to create turbulence that spreads the fun throughout a large portion of the pool.



derwater openings; when introduced, the air pushes down the water level in the chamber, creating a surge in the pool outside the chamber. Various wave patterns can be generated by having a series of chambers across the back of the pool and alternating air flow into different chambers. The resulting waves are typically around three feet in height but may reach to nearly five feet at intervals of less than three seconds.

► The second type of wave equipment is the *hydraulic system*, where water is pumped into enormous holding tanks above the deep end of the pool. When the gates in the bottom of the tanks are opened, this massive volume of water flows into the pool and creates a surge that can rise to nearly ten feet in height as fully surfable waves that can be cycled approximately every 45 to 90 seconds.

Of the two systems, hydraulic ones are more powerful and put tremendous volumes of water to work. As an example, we recently completed a system at the Mt. Olympus Resort Water & Theme Park in the Wisconsin Dells. Every 90 seconds, the Poseidon's Revenge wave pool sends more than 160,000 gallons of water surging through the 480-foot-long by 440-foot-wide pool.

These systems have massive pumps that use anywhere from 150 to 800 horsepower with each surge. A typical pool will have eight to 10 chambers or tanks, usually fed by four large pumps. Each unit can be controlled separately, which allows not only for generation of waves of different sizes, but also for sequencing in the opening and closing of chambers that can make the waves break straight across or from



The ability of these features to accommodate large numbers of bathers in the water all at once makes wave pools a much-desired resource for waterpark and aquatic-facility managers, and the fact that the effect of the waves mostly dissipates before reaching the outer perimeter makes them attractive to patrons of all ages.

right to left (or vice versa).

Hydraulic systems are larger, more expensive and create more excitement because of the size of the waves they can generate. Pneumatic systems are more common, however, because they work in relatively smaller bodies of water, don't take as long to build and are more affordable.

Critical Contours

Just as is the case on natural ocean beaches, the slope of the bottom of a wave pool is crucial in creating the wave.

As the surge moves forward from the deep end (typically six to eight feet deep), it passes over a sloped bottom that causes the wave to rise before it eventually breaks. The energy of the wave is then dissipated as it washes up onto the beach. From an engineering and design perspective, the available volume of water, the length of the pool and the angle of the slope determine the characteristics of the waves.

Another factor is the shape of the vessel. Wave or surf pools work effectively with either rectangular or fan-shaped ends, but fan-shaped systems have at least two advantages: First, they offer more surface area so smaller children and observing adults can enjoy the shallow water as well as a broader dry-beach area. Second – and this is particularly true with big hydraulic systems – the fan gives the wave more area in which to expend its energy.

Water is returned to wave systems through large grates positioned at the sides of the pools. These offer access to large, gravity-fed channels that flow to surge tanks positioned behind the wave-generating system. These tanks must accommodate both bather surge as well as the water needed to fill the tanks or chambers, and given the need for rapid flow, the plumbing lines tend to range from 24- to 32-inch diameters. The systems aren't complex (there is, for example, usually just a single valve to prevent

backflow), but they're big.

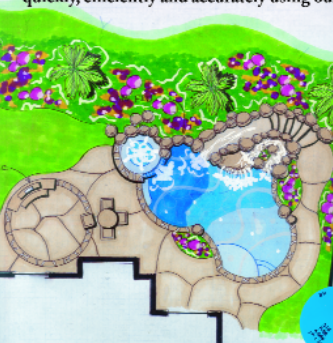
The filtration and chemical treatment are similarly simple and large, generally featuring high-rate sand filters with feed systems for liquid or gas chlorine.

The principles of structural and hydraulic engineering upon which these systems are based are quite well established – certainly to the point where I can't think of a single wave pool that doesn't function as it should. Most of the complaints we receive come from property owners who, when they see what these pools can do and how popular they become, wish they had opted for something larger. On a practical level, however, there can sometimes be issues with splash-out and water loss; we can generally take care of those post-commissioning concerns by adjusting the system to create somewhat smaller waves than were anticipated in the design phase.

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of redundancy. If we intend a system to run on four pumps, we design them with capacity that allows for production of the same effects with just two pumps. And there are always back-up devices on line and ready to go to prevent any down time. That's very important to property owners and operators: Obviously, they want these major attractions to be operational whenever their parks are open for business.

Getting Things Done

Whenever we get involved with a wave-pool project, we almost always work directly with a property's owners or managers. If they're involved in the world of waterparks, they tend to be extremely knowledgeable when it comes to technology and the types of systems that are available. They've also visited other properties and have strong ideas about what they want.

Their ambitions have a lot to do with how our work proceeds, but technically

it's a straightforward matter of knowing the size of the vessel, the anticipated bather load and the types of waves the park's team wants us to produce. From start to finish, a project commonly takes from 12 to 14 months, but when owners confront us with tight time frames (as was the case with the abovementioned Poseidon's Revenge feature), we've been known to pull everything together in as few as six months.

No matter the time line, the critical nature of these projects means we stay with them from beginning to end, working with the contractors who build the pool to be sure that all specifications and design parameters are met; overseeing the installation of all of the equipment; and, finally, commissioning the system. If there are any glitches (which happens rarely), we're there to work them out – but most of what we do after a system is up and running is about programming wave types and



The equipment driving these wave effects is well beyond the scale familiar to most watershapers, with pumps of up to 500 horsepower and plumbing runs up to 32 inches in diameter – whatever it takes to move tens of thousands of gallons with rapid recycling.



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establishing wave intervals that meet a park's needs.

As dynamic and energetic as wave and surf pools are, they present surprisingly few safety-related concerns. This is because we all are familiar with (and rigorously adhere to) health department standards for details such as signage, flow rates and surface-finish materials. While in operation, these pools are also supervised by cadres of lifeguards who are always on the lookout for bathers who might get into trouble. To that end, all of these systems are equipped with emergency shut-offs so lifeguards can immediately get control of any situation that might arise.

As mentioned above, the key to safe wave-pool operation is the fact that, un-

like ocean waves on natural beaches, operators have control of wave size and intervals and can also establish downtimes during the course of the day to ensure that weary swimmers take a break. With these basic safety measures, experience shows that even minor injuries are rare in these pools.

One thing that isn't rare in these pools, however, is great, good fun. It's always tremendously satisfying and exciting for us to watch a new system come to life and see people getting into the waves for the very first time: There's nothing like seeing their happy faces and hearing the screams of excitement.

That's why these pools are so popular: It's all about the sheer fun of not only getting in the water, but also having the chance to catch a wave!





The wave pool we recently completed at the Mt. Olympus Resort Water & Theme Park in the Wisconsin Dells sends more than 160,000 gallons of water surging through the 480 foot long by 440 foot wide pool every 90 seconds. The resulting waves recreate the sort of experience otherwise found only on a few great beaches – but with far greater consistency in wave size and shape.

A Master at Work



By Raymond Jungles

I first became an admirer of Roberto Burle Marx while I was a student in landscape architecture at the University of Florida: His remarkable work, which combined a special brand of modernism with the lush potential of Brazilian settings, was incredibly powerful and *the* major formative influence on my own professional career.

I'd learned how to draw in school and had acquired the technical skills it took to be a landscape architect, but it was seeing how Burle Marx approached his landscapes and paintings – not to mention the way he lived his life – that gave me the spark I needed to define my own approach.

My personal relationship with him began soon after I graduated in 1981. I'd read an article in the *Miami Herald* about Burle Marx turning 70 and began writing to him in hopes he'd invite me to visit his home in Brazil. A couple of months later, I received a call from my friend Lester Pancoast, a well-known Miami architect. He mentioned that Burle Marx was his houseguest, said the great man had a free evening and suggested I should invite him to dinner – which I did without hesitation.

My future wife and I spent a nice evening with Burle Marx, who was reserved but very polite and seemed all the while to be sizing us up. After dinner, we went to Pancoast's home, where Burle Marx showed us some amazing black-and-white etchings he'd recently completed and offered to sell them to us for \$500 apiece. We immediately latched onto a couple, and it was obvious that he appreciated people who appreciated his art.

When it comes to identifying those who've shaped his life and work, acclaimed landscape architect Raymond Jungles doesn't hesitate in naming Brazilian designer Roberto Burle Marx as a singularly profound influence. Famous for bold arrangements of plant materials and architectural forms, Burle Marx's gardens are among the world's most celebrated and studied – a legacy Jungles describes here as a close friend and student of the master.



It was the beginning of a friendship that would last the 14 years until Burle Marx died in 1994.

GOING SOUTH

About two months after our first meeting, Burle Marx was passing through Miami on his way home and had apparently paid some attention to my requests to see his work in Brazil at firsthand: I jumped at the chance when he asked me to join him on his return trip. When we arrived in Rio de Janeiro, I humbly asked when I might visit his home. Now, he told me, ushering me to his vehicle to join several other people in his entourage.

It was fascinating to watch the way he lived his life. He approached everything he did with the same passion and boldness that defined his work and loved being surrounded by all sorts of interesting, creative people including musicians, sculptors, botanists, painters, architects, writers and others who regularly spent time with Burle Marx. We shared good food and fine wine and generally had a wonderful time.

He was one of those people who seemed to thrive at the center of an incredibly dynamic scene. I came to see being around him as participating in an ongoing celebration of all things artistic and creative.

Experiencing all this at a young age truly opened my eyes as to how a person could live an artist's life. I was impressed, for example, by the way he ran his studio: It wasn't in any way an oppressive work environment, but was instead a free-wheeling agglomeration of constant creative energy. His associates came and went with great freedom so

No matter whether the project was commercial or residential, large scale or small, Burle Marx approached each setting individually and had an amazing ability to approach a space without relying on formulas, conventions or preconceptions. This tendency toward originality showed up with particular clarity in formal architectural settings, where he played off rigid forms by using plants and water in immensely creative and imaginative ways.

Burle Marx





long as the work was done. And that work was *amazing*, as he seemed by strength of personality to draw the very best out of his colleagues – all of whom seemed to have the same admiration for him that I did.

I never worked with him on any project, but I did have the privilege of visiting him at least once each year to recharge my creative batteries. I was particularly happy to visit in August, when he'd host these massive birthday parties attended by scores of interesting people: They were, quite simply, some of the most memorable events I've ever attended.

Once the festivities were over, he'd lead us on excursions to study gardens or collect plants in the wild. Through it all, he was remarkably generous; in fact, only my mother outranks him as the most giving person I've ever known: He was an open book, always more than happy to talk about his work or share anything by the way of prints or sketches from his office or cuttings from his nursery or garden.

It was as if life was somehow bigger or more important when we were in his presence. Burle Marx truly was larger than life, one of the kindest people I've ever known – and a lot of fun besides.

PERFECT INFLUENCE

As much as I admired his passion for life, I can't even begin to describe the depth of Burle Marx's influence on my work.

Through the years, he always passed through Miami on his way to wherever he might be going in the United States, and he was often a guest in my home as a result. During those visits, I'd always show him drawings of projects I was working on, and if time allowed we'd also visit some of the gardens I had designed.

He was always completely candid in voicing his opinions and never hesitated to tell me what he liked and didn't like. He had a colorful way of expressing himself, but there was never any doubt about what he really thought. I learned a great deal from these vivid critiques – so much so that even now, I still think in terms of what Burle Marx would do or say in a given situation.

To this day, however, I find it difficult



Although Burle Marx used nature for inspiration, he wasn't particularly inclined to mimic it directly. Instead, he used plants, stone and water to suggest nature in the midst of spaces clearly laid out and intended for human use. This is a tactic I've often used myself (opposite), setting up spaces that are clearly non-natural but using plants and water to tie everything back to common experiences of nature.



to describe Burle Marx's work in words: You really have to see and process several of his projects to understand his approach to landscapes. He was incredibly perceptive, always had a keen sense of how to dissect a given space and abhorred the thought that there could be any specific formula for design success. Always, he approached each space on its own merits and terms.

His work is often described as modernist, but at the same time, everything he touched was obviously and deeply influenced by natural forms. He often used groupings of the same type of plant, for example, and was a careful student of botanical forms and structures. He also believed that, as a designer, he had an obligation to stay up to date and work with the best available tools and technologies.

Most of all, he was always inventive. He might, for example, take the stones from an old building to create a texture wall, but there was never a sense that this was mere decoration. He was appalled by neoclassicism, but there was still a timeless quality to his work. He believed that color should be applied for specific reasons and never splattered them about for their own sake. If he used red, for example, it was subordinated to the overall composition and usually served the specific purpose of drawing attention to a particular part of the design.

Despite the influence of nature on his work, however, Burle Marx never directly emulated nature. If he created a waterfall, for example, he'd use the stone material to shape architectural statements that he controlled. In effect, while his work always harmonized with natural settings, it was obviously man-made. In his warm minimalism, he revealed his mastery by blurring the boundaries between natural and built environments.

POSITIVE REFLECTIONS

I've never sought to copy Burle Marx in my own work, but his influence is certainly evident in almost every project I've ever done.

As he did, I believe very much in working with a contemporary, modern vocabulary and avoiding classical forms. Unlike many of his gardens, however,

those I design can be more direct in their representation of nature – visually strong and carrying the appearance of naturally occurring phenomena.

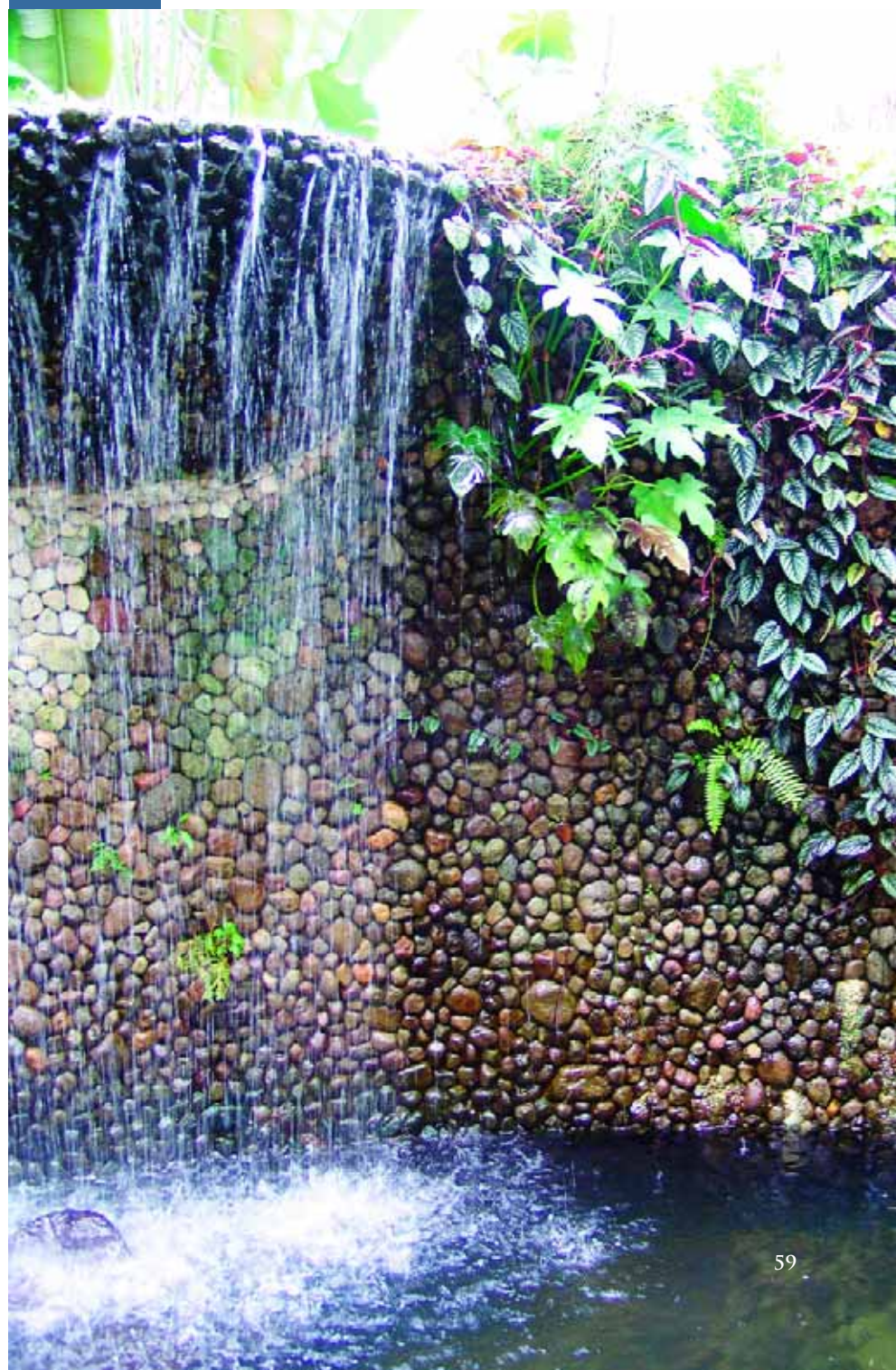
I also draw contrasts by using architectural elements in much the way he did. My hardscapes tend to be very strong and clean, and I love the minimalism found in Japanese architecture and a number of contemporary architects and designers – Burle Marx chief among them.

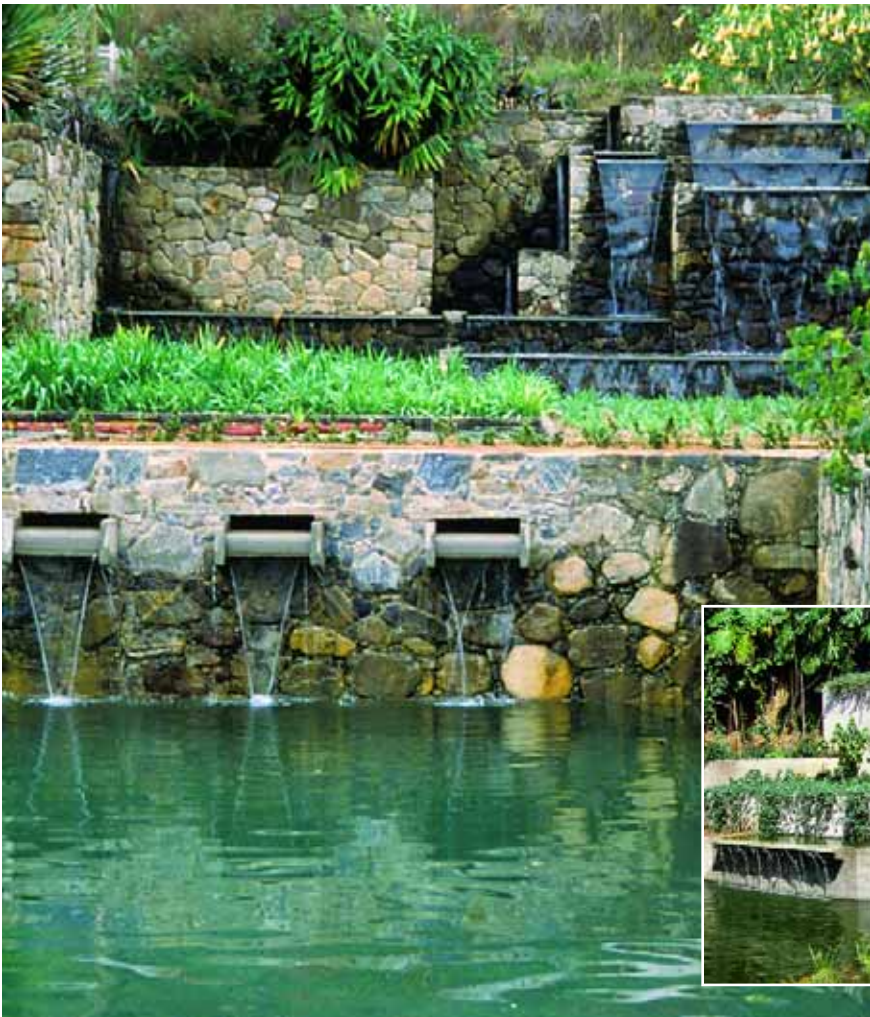
I don't work with formality of the sort

seen in European gardens and, like Burle Marx, try to use the geometry of modernism to emphasize the natural elements in plantings, water and stone. Sometimes those spaces are "organized" and may seem formal, but my aim, which I've borrowed from Burle Marx to a large extent, is to create both harmony *and* tension between nature and structures arrayed in its midst.

In that sense, we have a similarly playful approach to two prevailing schools

Jungles





of thought: On the one hand, modern architecture is seen as a contrast to nature, but on the other, it can be used to fuse natural elements together with built structures. We work in both worlds, and the balances and sensations of integration can be truly sublime. A portion of a wall, for example, has a distinct form, but it never sits alone and aloof as a separate sculptural statement.

When I have the opportunity to work in a dramatic natural setting (on the seashore or in a desert or high in the mountains), striking those balances can be fairly easy because all I really need to do is to find ways to allow the beauty of the setting to invade the built spaces. Most of the time, however, I work in places that

Burle Marx often used architectural forms in his waterfeatures, playing with contrasts between natural and artificial statements to highlight spaces and bring them into harmony with their overall surroundings. His sense of these shapes was well ahead of its time – he was truly one of water-shaping's pioneers – and his work exemplifies design insights and details I've translated and played with throughout my own career.

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have already been touched by development, whether on the coast, in the suburbs or in completely urban locales. No matter where I find myself, the challenge is to establish gardens that bring the comfort and beauty of nature into the setting.

This is an area in which Burle Marx's art was supreme: Wherever he worked, his desire for balance invariably overcame the human impulse to dominate nature (or even *fear* it).

INTUITIVE INCLINATIONS

As designers, we spend most of our time finding solutions to challenges presented by the spaces we confront, but to a large extent the process boils down to determining what we like and don't like. That's why no two designers are the same and, as much as someone like me can be influenced by someone like Burle Marx, the fact is that any design is the product of an individual designer's intuitions and experiences.

Burle Marx is no different. As is the case with most great artists, his work was intricately tied to his time and place: When he was completing his early projects in the 1930s and '40s, he was surrounded by the explosive influence of architectural modernism as it swept across the globe and its original forms were altered and expanded in response to local cultures, individual artists and interested architects.

In Burle Marx's case, he was working primarily in Brazil through those years and is credited for pioneering modernism in his country, which is graced with incredibly bold landscapes loaded with spectacular mountains, lush flora, striking geological formations and amazing seascapes. In such settings, a designer with Burle Marx's outgoing, engaged personality was naturally going to do bold and exciting things.

He's renowned to this day for his use of grouped plantings, for instance. You don't tend to see a single palm tree in the natural world, but instead of planting trees of similar size, Burle Marx would stagger their sizes to make it look as though the main trees had dropped seeds and established a colony. These plantings were a literal representation of

Jungles



what he saw in nature, but at the same time they brought visual structure to a space and helped observers understand the character of the plants.

Burle Marx is particularly revered for his bold patterns, but when you visit his own garden, the impression is all about softness and subtlety. I always admired him for that: These small contradictions have always kept people from packing him into any sort of conceptual box.

He was also generous in giving credit to artists whose work influenced his own. I asked him once if Japanese design had influenced him. He simply shrugged and said, "How can you go to Japan and *not* be influenced?"

Burle Marx also had a wonderful

sense of how gardens and architecture work together. In that sense, his approach reminds me of Luis Barragan or Ricardo Legorreta, both of whom thoroughly combine their buildings with garden spaces. Their gardens aren't particularly lush (their Mexico being quite arid compared to Burle Marx's Brazil), but all three demonstrate a similar urge to harmonize structures and natural forms.

WATER SPIRITS

One of the things that Burle Marx had going for him was an encyclopedic knowledge of the plant kingdom and his special ability to conceptualize his way

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Burle Marx

When he explored modern styles and used more purely decorative forms, Burle Marx stepped well away from convention and emphasized the natural features of water, plants, stone and, in one memorable case, tile – even in formal or overtly geometrical settings. I pursue the same general philosophy, which I see expressed not only in my work but in the work of the likes of Ricardo Legorreta and Luis Barragan, with all of us striving to harmonize structures and natural forms as Burle Marx did.





through all the possibilities in everything from lush forest settings to desert climes. (I remember asking him what he thought of Barragan; he smiled and said, “He needs to use more plants.”) No matter where he worked, Burle Marx carried that trove of information with him.

Burle Marx also shared the view with Barragan, Legorreta and others that water was a crucial design element and saw to its effective use in a large percentage of his designs.

Indeed, he used water as a fundamental building block, and I particularly admired the way he would divert parts of streams to create small pools that reflected the sky, surrounding structures and plants. He understood that water created powerful points of focus and that, as human beings, we’re all deeply affected by its presence.

In the tropics, where he did the majority of his work, water is an incredibly powerful presence both in the way it sustains flora and fauna and as a destructive force. He knew water to soothe and comfort, but he also knew it to excite and even terrify. At the same time, he knew in arid settings that the scarcity of water defines the landscape and that its presence creates oasis-like havens.

Burle Marx keenly understood these dynamics and used the reflective quality of water, its sounds and the structures he used to contain it to tremendous effect.

I try to do much the same in my own



Burle Marx

work, and I love to include relatively large bodies of water and use reflections to influence, for example, observers' perceptions of interior spaces. In this way, I use water to conjure senses of grand dimensions even in small spaces that would be visually diminished without its assistance.

In a much larger sense, we're able through water to connect just about any space to the entire universe. That may seem like overreaching, but when you see and understand the way Burle Marx and other great designers use water for just that purpose, a big, abstract idea becomes an entirely practical principle of design.

Burle Marx was ingenious as well in the ways he incorporated plants into his watergardens. Because he understood them all so completely, he was able set various species at precise elevations so their root systems took full advantage of his watershapes. In many instances, he set watergardens near swimming pools so those immersed in a fully architectural bodies of water would have a sense of connection to water in more natural forms.

THE POETRY OF SPACE

The work of Burle Marx is both powerful and effective, but it's also so intellectually complex that it's impossible to describe all of its nuances and the depth of his many achievements. The work is, in short, like the man himself – a personality so vivid and a knowledge so vast that capturing its essence would take volumes rather than these few pages.



Many of Burle Marx's projects are overtly drawn from nature and the plants he found all around him in his native Brazil. There's an elegance to it – as well as clear references to the great Japanese gardens he so admired – and an invitation to visitors to pause and relax. Again, this approach to natural forms fully engages my own creativity and has led me to develop spaces that pay tribute to Burle Marx and other masters who've gone before me.

More on Burle Marx ○○○○

The books on Roberto Burle Marx and his work are plentiful. My personal favorites include:

* *Roberto Burle Marx in Caracas: Parque del Este, 1956-1961* by Anita Berrizbeitia (University of Pennsylvania Press, 2005)

* *Roberto Burle Marx: Landscapes Reflected* by Rossana Vaccarino (Princeton Architectural Press, 2000)

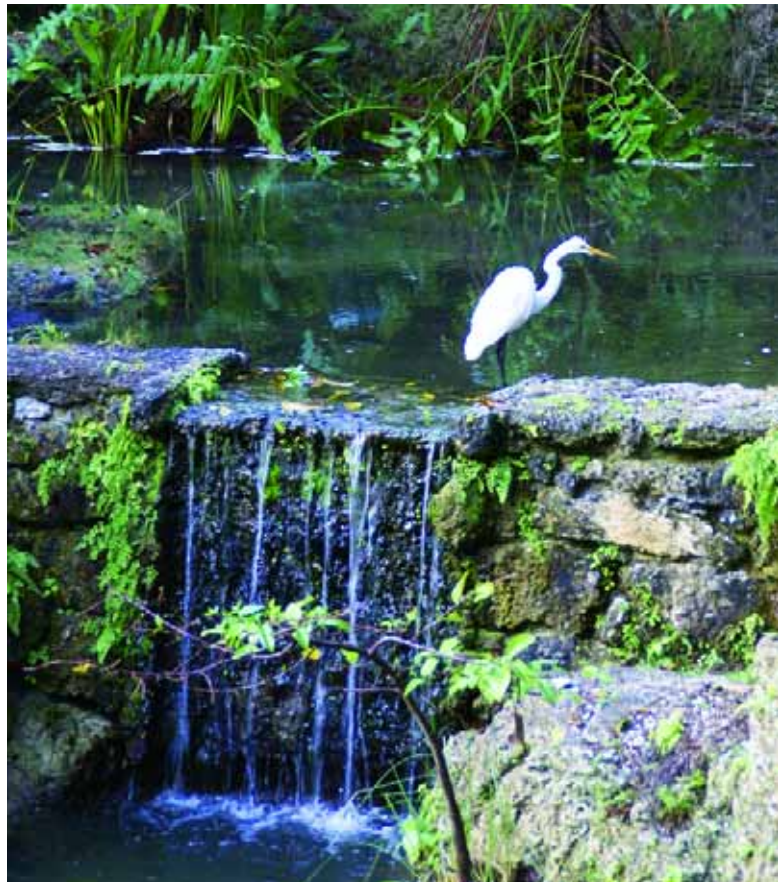
* *A Picture of Roberto Burle Marx* by Lawrence Fleming (Editora Index, 1996)

* *Roberto Burle Marx: The Unnatural Art of the Garden* by William Howard Adams (The Museum of Modern Art/Abrams, 1991)

* *The Gardens of Roberto Burle Marx* by Sima Eliovson (Timber Press, 2003)

* *The Tropical Gardens of Burle Marx* by P.M. Bardi (Reinhold Publishing, 1964)

–R.J.





Jungles



For my part, I'll always feel his presence in my work and the way I approach my life. On the occasions when I had the opportunity to see him interact with clients – even when he was speaking Portuguese and I couldn't understand everything he was saying – I could always tell how he affected people and perceive the respect they had for him.

There was always a feeling that something very special and important was happening, and he translated those sensations into the work at hand, weaving any space and the elements within it to create works of art that have stood the test of time. These spaces will become increasingly important as time goes by and more and more people become aware of and feel his influence.

There will never be another like him, but he certainly has influenced me and touched a great many other people through his work and in the way he approached his life. It's all worth study by anyone who strives to create something special in designing and organizing spaces: Roberto Burle Marx may no longer be here in the flesh, but his spirit lives on!

The Power of Transformation

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Shawn Burch

*STB Landscape Architects
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"Genesis changed my life.

"As someone who studied landscape architecture, I've seen nothing anywhere else that teaches anyone how to design watershapes – it just didn't exist until Genesis came along and filled the gap with educational programs unequaled in this industry.

"After going through their programs, I'm inspired to learn more and I'm anxious to travel the world to study and absorb design traditions and develop and extend my own design vocabulary. I want to be a more creative designer, and even after more than 30 years of practicing landscape architecture, it feels like my career as a watershape designer is just beginning.

"I've been through the entire program and am now a graduate of the Genesis 3 Design Group's Professional Watershape Design programs. Every step of the way, I saw what I was doing as an investment in myself and my skills, and as I see it, I've been paid back many times both personally and professionally.

"The program has taken me to a much higher level and has let me explore my true potential. It's that good!"



William Drakeley, Jr.

*William Drakeley Swimming Pool Co.
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"Our projects all looked good before I became involved in the Genesis movement, but we really didn't know how to push the envelope with respect to design: We shied away from water-in-transit systems and unique materials and anything particularly creative.

"Now that we're involved with Genesis, we're far more sophisticated in the range of features we offer our clients, far better at presenting our ideas and far more capable of creating projects that appeal to our clients.

"We've jumped several levels in terms of the 'wow factor.' People in our market now know that if they want an ordinary project, they call someone else – but if they want something spectacular, we're the company to call. Bottom line: Through Genesis, we've learned all the different things you can do with water and how to become *artists*."

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Randy Beard
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"I don't like to consider where I'd be had I not found this resource, but I'm thrilled to consider the future now that I have: Genesis has unlocked my potential in ways I could have never anticipated or imagined before. It's changed everything for me – *everything!*"



Joan Roca

Aquart J. Roca
Guanacaste, Costa Rica

"Before Genesis, I did nice work, but now I do *great* work. It's as simple as that.

"But to me, Genesis is about more than the work: It's all about

leading a happy life. You learn to do incredible things with water and become excited about what you're doing because you're not afraid and have the courage to be creative, but the best part of the program is the people you meet who have the same outlook and are doing the same thing.

"They all want to improve their work and be happier about themselves as professionals, and I have made great friends and learned so much through Genesis. I now do wonderful projects for my clients, all of whom appreciate having something no one else has. In that way, Genesis has not only changed *my* life, but has given something important to my clients through what I do.

"Yes, Genesis helps you make more money and be more successful, but what it really does is inspire you to think differently about your work and yourself!"



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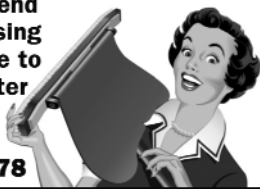


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SITE-FLYOVER VIEWS

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GOOGLE offers Google Earth Pro for design professionals who need to inspect a site from the air and/or want to improve their client presentations with site-flyover graphics. The system enables the operator to look over a property and the surrounding area from the air, zooming down for high-resolution, street-level views of areas in thousands of cities in the United States and abroad. **Google**, Mountain View, CA.

UPGRADED COVER HARDWARE

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PLASTIMAYD CORP. now offers commercial-grade hardware with all of its pool safety covers. All residential and commercial covers now feature ultra-sonically hardened anchors and exclusive double-tension, commercial-grade springs combined with special locking buckles that provide maximum deck-anchor strength. They also come with special tools to simplify cover installation and removal. **Plastimayd Corp.**, Louisiana, OR.



Continued on page 76

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SALT CHLORINE GENERATORS

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INTERMATIC offers four new I-Pure salt chlorine generators. Designed for ease of use, the units include high-salt indicators, power meters that indicate the system's chlorine output, power lights that indicate when the system is operating and low-flow alert systems that shut off the generators as needed. The self-cleaning cells stay cleaner and last longer, and a clear housing allows for easy inspections. **Intermatic**, Spring Grove, IL.

UPGRADED HEAT PUMPS

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PENTAIR WATER POOL & SPA has upgraded its ThermalFlo heat pumps with titanium heat exchangers and a new time-clock override feature. The titanium heat exchanger resists corrosion, enhances performance and extends the life of the heat pump, while the new time-clock monitors water temperature and turns the water circulation pump on and off in response as needed. **Pentair Water Pool & Spa**, Sanford, NC.



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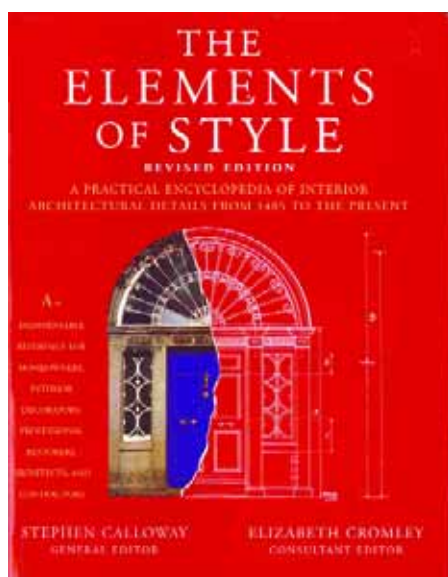
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By Mike Farley

Worlds of Detail



When people ask me how I approach the design process, I tell them it's always based on three things: The clients' ideas about what they want; the site's characteristics; and the architecture of the home.

If I had to pick one of those factors that's been the most challenging for me to master, I'd have to say it's been gaining a firm grasp on architecture and the details that make up architectural styles. And when I've been asked where that kind of background can be gained in the form of a reference book, I've always been at something of a loss to make a recommendation.

Basically, it's tough to narrow things down because architectural design is so huge a topic. Without an architect's educational background and training, I've been left to pick up what I can mostly by paying attention to what I see around me – a challenge in itself in my area, where most homes are relatively new and don't adhere to easily identifiable styles.

But the fine points of design are becoming less of a mystery to me now, courtesy of *The Elements of Style*, edited by Stephen Calloway with Elizabeth Cromley (Simon & Schuster, 1996). I spotted a copy of this 560-page textbook in the office library of a general contractor I've been working with lately, and I knew right away that this was a volume I needed to add to my collection.

This bountifully detailed, well-illustrated text covers major architectural styles dating to 1400 AD with a primary focus on architectures of the United Kingdom and the United States. It highlights periods and traces design traditions that are probably familiar (at least by name) to most of us, including

Baroque, Colonial, Federal, Empire, Georgian, Arts & Crafts, Art Deco and Modern (among many others).

Each section offers a general description of the style and the historical period in which it originated and was first applied. On that level alone, it's useful as a design primer – but more helpful still is the degree to which each section conveys information on specific details and features that constitute each tradition.

The focus of the book is primarily on interior design, but each section also includes information on architectural basics including doors, windows, walls, ceilings, floors, fireplaces, staircases, built-in furniture and even service items such as appliances. Each section also offers detailed illustrations of such things as doorknobs and windowsill composition. In the section on the Baroque period, for example, are four pages carrying dozens of images of balustrades and another set of pages on fireplace surrounds.

This focus on interiors doesn't bother me, because as a watershaper the book gives me ideas about details I can incorporate *outdoors* that will capture or extend the spirit of elements found *indoors*. There's just so much here that I see this book as being essential to anyone who's following current design trends and needs to find ways to link interiors to exteriors both subtly and seamlessly.

The Elements of Design is a true treasure chest, and I have thoroughly enjoyed it as an introduction to the work of pioneering architects and homebuilders as well as a resource on the depth and richness of the vocabulary of architectural style. It has changed the way I look at neighborhoods when I travel and increased my appreciation for the fact that, as a watershaper, I'm tied into a vast design heritage.

Fair warning, however: The book makes for bland reading, but I value every page. **WS**

Mike Farley is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Claffey Pools in Southlake, Texas. A graduate of Genesis 35 Level I Design School, he holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.



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