



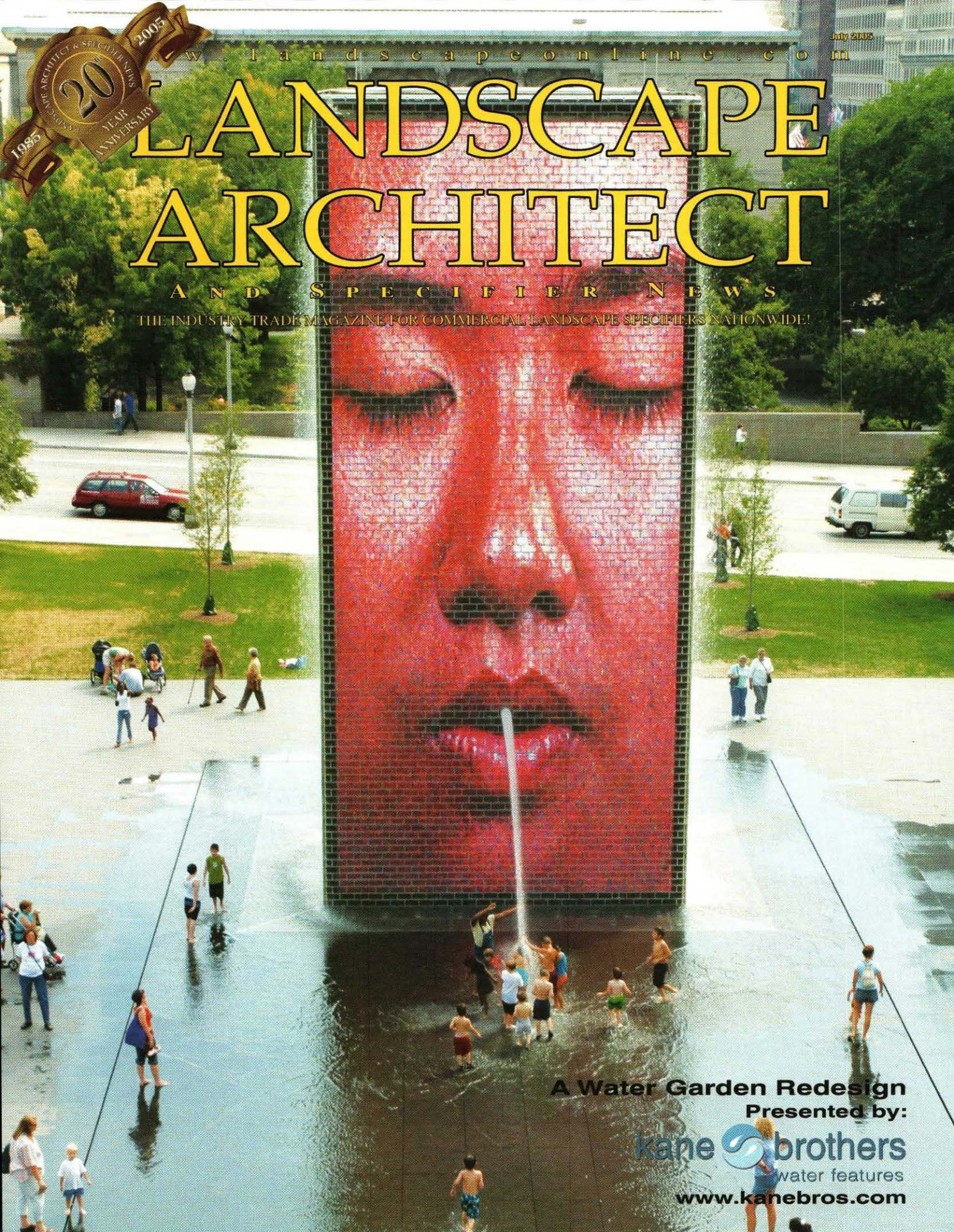
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A Water Garden Redesign
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A Water Garden Redesign

By Stephen Kelly, regional editor

New technology and purportedly easy to install equipment have created a boom in the pond and water feature business over the past decade. The right design for a property is important, of course, but proper installation is also critical. Not all contractors, however, have the necessary experience or education to properly install a complex water feature design.

Reshaped contours of the stream beds brought more movement within the waterways, and adding two cascading upper pools created interesting views from the house. The position of the waterfalls directs the sound toward the house. Two submersible pumps, located in the skimmers, generate 9,000 gph at 10' of head each. The advantage to using such pumps is to move a much greater volume of water at a lower electrical cost. A third submersible pump, which generates 5,400 gph at 5' of head, is a back-up but provides more flow to the streams to increase the audio and visual effects.



“New technology and user-friendly equipment has created a boom in the pond and water feature industry over the past decade.”

— Chris Kane, Kane Brothers

In a recent *LASN* survey, we asked landscape architects if they decide what construction firms bid to install their design work. Almost 70% of the respondents said they are involved in those decision (16.3% “always”; 26.8% “most of the time”; 26.8% “sometimes”).

All this came to mind when Kane Brothers, the Burr Ridge, Ill., designers and installers of water features for the past 16 years, showed us the water feature they designed and installed at the Pinkerman residence in Inverness, Ill., about 35 miles North West of Chicago. Their first challenge was gaining the homeowner’s trust, which they conceded wasn’t easy, as the client was dissatisfied with the work of the water feature contractor they had hired the year before.

The initial site visit allowed the designers to review the existing work and determine what the reconstruction would involve. After a thorough analysis of the project and numerous meetings with the client, the decision was to remove the water feature and rebuild it using new design elements. The advantage was that the original design ideas that the client liked could stay

and the focus could shift to those elements needing change. The new design would enhance the views from the house, the sunroom and outdoor patio area while incorporating a more suitable filtration system.

Where the Design Went Wrong

“Prior to mechanical filters, such as skimmers, U.V. lights and vortex filters, and a wide variety of biological filters (pressurized sand/media filters and trickle towers), most ‘live system’ water gardens and ponds relied heavily on aquatic plant life and frequent water changes to control water quality,” says Chris Kane. “In many cases these systems proved to require such high maintenance that the beautiful water feature was perceived to have a very short life span. Thanks to recent innovations in the industry these issues are combated with filtration systems.”

The New Design

The new design presentation included a larger main pond, 23' x 25' and three feet deep, to accommodate koi.

“The original feature included two streams that we incorporated into our design,” Chris explains. “The width was increased to accommodate properly scaled stone and allow room for marginal aquatic plantings. The contours of the stream beds were reshaped to create more movement within the waterways. Two cascading upper pools were added to create views from the house looking out at the feature. The waterfalls were positioned to direct the sound that was generated toward the house. Since the patio and sunroom were at an elevation considerably higher than the garden area, approximately four feet, the height of the pools would bring the feature closer to

The pond pumps consist of three submersibles and one external. The external pump is a 1-hp self-priming unit which generates 7,400 gph at 14' of head. The benefit of a self-priming pump is it can be located above water level and draw water, rather than just push it. This pump supplies water to the pressurized biological filter and the ozone unit before splitting into two lines and returning to the upper pools and stream.



A Sampling of Aquatic Plants for the Water Garden



canna lilies (*Canna x generalis*)



Six underwater lights (50 watt bulbs) illuminate the main pond inhabited by the koi. A wide flood bulb disperses the light throughout the entire body of water. The fixtures were installed within the rock formations underwater. Gold rush reed, Iris, white rush and lotus plantings were added to the existing plant palette here.

eye-line from those areas.” With the addition of these pooling areas, the design called for a soil berm to create an elevation change and a natural boulder wall to retain the soil.

specified to provide the flow to the pressurized biological filter and the ozone unit. Ozone in water functions as a microbial disinfectant and a strong oxidizing agent of organic compounds. Ozone has an oxidation potential about 1.5 times higher than chlorine.

The water feature is nestled between the outdoor living areas directly off the house and the turf in the back yard.

As the original feature lacked adequate filtration, a new system was designed to accommodate the fish and minimize algae growth.

“To accomplish this we incorporated two mechanical skimmers that remove surface debris before it has a chance to settle to the bottom of the pond. These types of filters play an important role in an overall filtration system. Mechanical filtration units, such as skimmers, allow much of the organic debris to be removed before it has a chance to break down in the pond. If debris such as leaves settles to the bottom of the pond, it depletes oxygen and eventually leads to the formation of anaerobic bacteria on the pond floor.”

The designers warn against the common practice of bringing water directly from the pond to the pump and into the biological filter without using a prefilter. This is important because a biological filter is designed to provide surface area to colonize bacteria to assist in nitrification, not in breaking down leaves and fish food. A priming pot and leaf trap do not count as a prefilter. Sure, they will remove larger debris but miss the smaller particulates. This can prove detrimental to the system because the impeller of the pump chops the debris into finer pieces before moving it into the bio-unit where it will inhibit the colonization.

A pressurized, external biological filter was specified and an ozone generator to assist in removing the heavy organic load in the pond. A series of submersible pumps was designed to circulate the majority of the water through the skimmers and create the desired visual effect in the waterfalls. An external pump, which draws water through a gravel bed and a manifold located at the pond’s bottom, was



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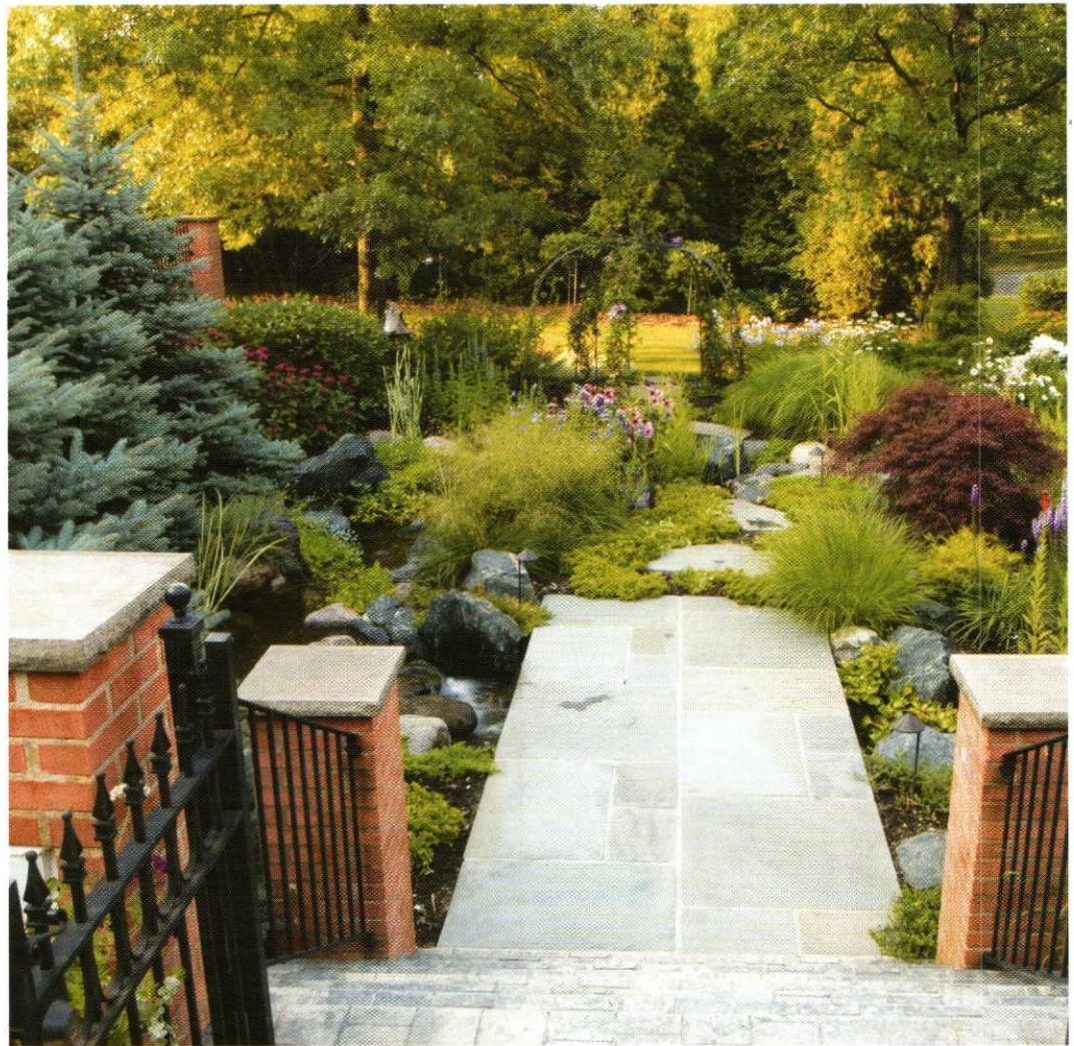
creeping Jenny (*Lysimachia nummularia*)



Lobelia (*Lobelia erinus*)



lizards tail (*Saururus cernuus*)



Since the original water feature was some four feet below the patio, the redesign called for a soil berm to raise the elevation of the water garden and a natural boulder wall to retain the soil. Many of the original plantings were kept. Lizard's tail (*Saururus cernuus*), water hyacinth (*Eichhornia crassipes*) and canna lilies were added here.

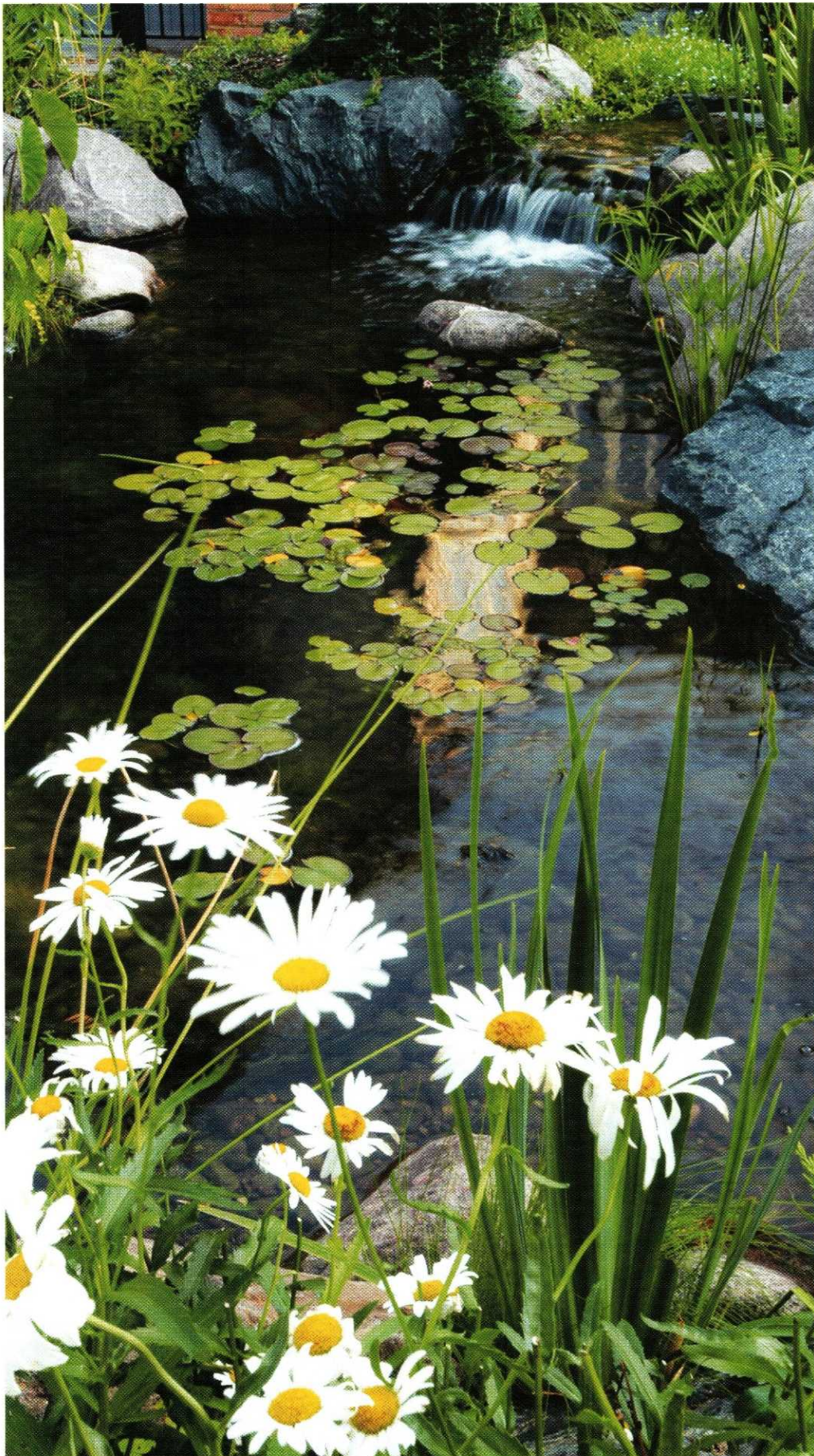
Design Approval and Wipeout

With the confidence of the clients resurrected, and approval on a final design, the construction of the feature began by removing the water feature, then reshaping, excavation and contouring. With the grades reset and weir walls installed, the 2,800 square feet of 45 mm EPDM rubber liner was put into place. The stone originally used on site was a lime-based ledge rock. The new water feature called for boulders, which the designers find creates more interesting water movement than

ledge rock and also maximizes the amount of water surface throughout the feature. In most cases when ledge rock is installed as the shoreline of a feature it requires a large shelf support, which ultimately reduces the water surface. With the liner in place the boulder placement began, with over 80 tons of boulders individually set to create this feature.

The main pond is approximate 25' x 23' with varying depths from 10" to 3', allowing marginal plantings, lilies and the over-wintering of koi.

In this climate zone, a three-foot depth allows the fish to be left in the pond over winter as long as a hole in the ice is maintained with a floating heater or bubbler. The stone work on the shoreline was constructed knowing that this feature would remain a live system, an important consideration when placing the boulders, as the designers allowed space for aquatic planting pockets early in the construction to ensure a natural shoreline appearance.



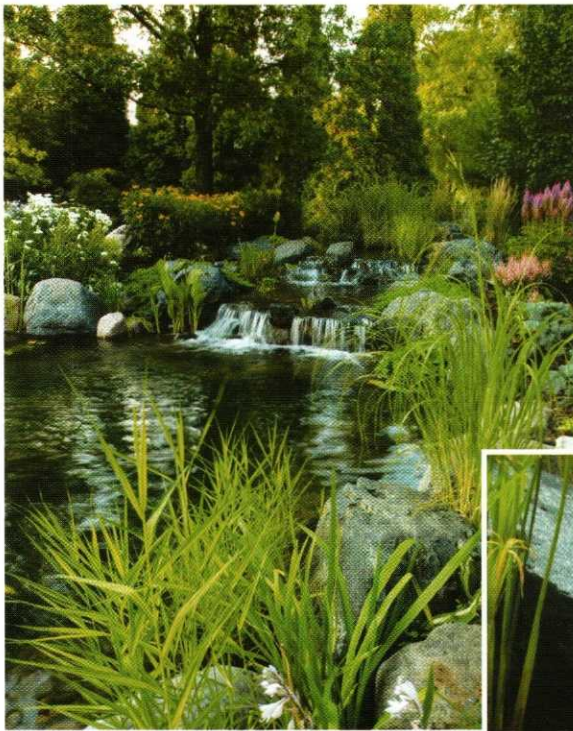
Meandering Streams, Soft Glowing Lights

Two meandering streams, which start at the same point, split into two water courses, cascading over a combined total of 75' before returning to the main pond. The streams are not only pleasing to the eyes and ears but help maintain water quality. The water courses are heavily planted with aquatics which ultimately remove many of the nutrients in the water and achieve an overall balance in the water. The cause of an algae bloom is often the result of excessive nutrients in the water. The use of aquatic plants assists in removing these nutrients and suppressing algae. The plantings also bring a natural appearance to the stone shoreline.

Access to the first stream is via steps leading down from the main outdoor living and over a

Keeping this tranquil pond setting of water lilies, umbrella palm and gold rush reed among the granite boulders operating is a fairly elaborate two-skimmer unit filtration system that houses the submersible pumps and keeps the ponds surface free from debris. The pumps sit in the rear of the skimmer and draw water through a bellows that floats just below water level.

The second part of this system is a pressurized biological filter housing plastic media that gives beneficial bacteria a surface area to colonize, which assists in nitrification and maintaining water quality. The addition of an ozone unit allows ozone gas to mix with the water, eliminating many of the organics in the system. Because ozone is unstable, it readily combines with other molecules in the water, eliminating odor, discoloration and suspended algae. This system, however, can be dangerous to fish if not properly installed and monitored.



The water feature redesign includes a larger main pond (23' x 25') that's three feet deep to accommodate the fish. The original feature included two streams that were incorporated into the new design. The stream width was increased to make room for properly scaled stone and marginal aquatic plantings, including canna lilies, umbrella grass, variegated giant reed, Iris and gold rush reed. The waterfalls are showcased at night by 20 and 50 watt accent lights located just behind the shoreline boulders.

bluestone bridge; the second stream is reached by a series of strategically placed stepping stones.

The two cascading upper pools measure approximately 10' x 6' and 6' x 4'. These pools create site lines from the house and outdoor living areas. The majority of the sound in this feature is generated by these two falls. Falling water is not only aesthetically pleasing, but has the practical value of adding more oxygen to the pond.

The final step in the construction of the water feature was installing the terrestrial plantings. Placing 80 tons of stone requires a good deal of terrestrial plantings to soften the landscape. The residence already had a mature landscape, so the focus was on shrubs, perennials and ground covers. With a wide variety of perennials the garden comes alive with colors and textures. There is a balancing blend of aquatic plants and terra firma plantings.

Thirty-six low-voltage accent, path and underwater lighting fixtures illuminate the water feature. There are accent lights focused on the waterfalls from outside the pond and uplighting for some of the surrounding trees. The lights create a soft glow along the bridge, steppers and foot paths. Six underwater lights allow viewing of the fish at night in the main pond.



The original stone on site was a lime-based ledge rock. The new design called for 80 tons of Wisconsin granite boulders individually set. The designers believe boulders make for more interesting water movement than ledge rock and also maximize the amount of water surface throughout the feature. "In most cases, when a ledge rock is installed as the shoreline of a feature it requires a large shelf to support it, which ultimately reduces the water surface," explains Chris Kane. Umbrella palm, gold rush reed, water lilies, Iris, fiber optic rush and white rush prevail.

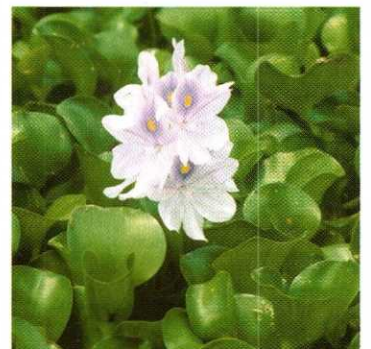
A Sampling of Aquatic Plants for the Water Garden



taro (*Cyrtosperma chamissionis*)



umbrella grass (*Digitaria coenicola*)



water hyacinth (*Eichhornia crassipes*)