

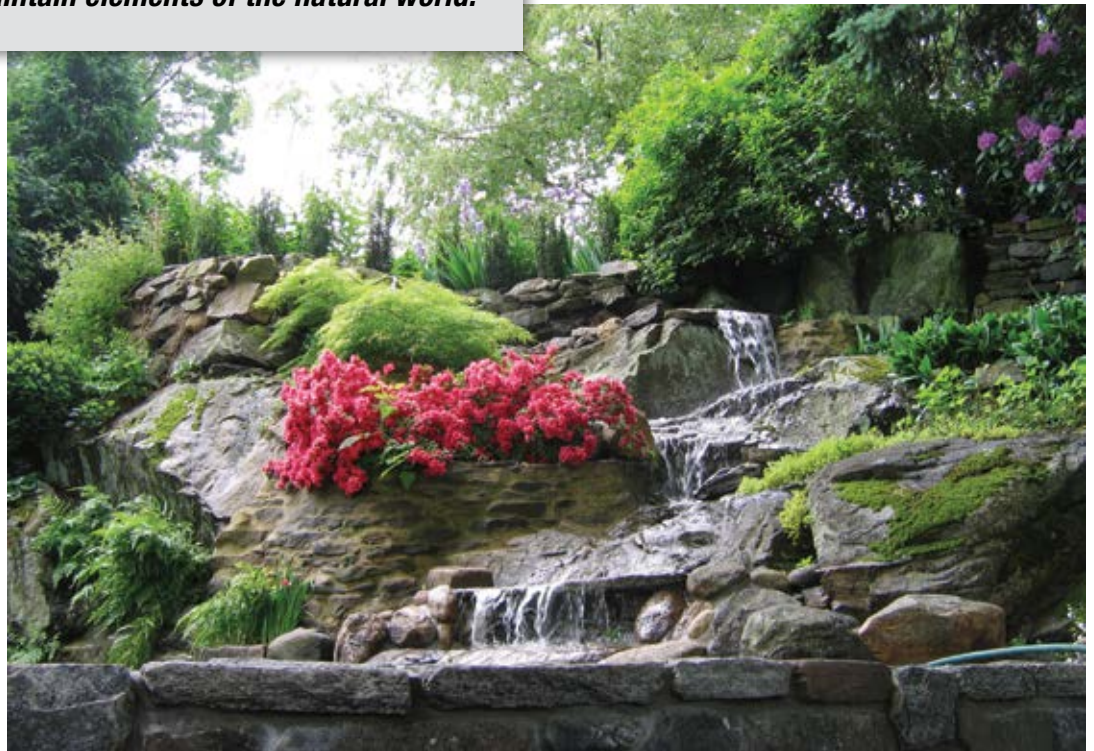
Shotcrete in Landscape Design

By James Scott

When we think of the shotcrete process, mental images of large industrial projects and repairs come to mind, such as tunnels, bridges, and drainage channels. If we keep thinking, we may think of smaller, human-scale recreational projects, such as swimming pools and skate parks. If we think even further, however, we may just bring ourselves back to the very beginnings of shotcreting—where its inventor (Carl Akeley) used it for his craft as a multi-disciplined naturalist.

Modern-day designers and naturalists use the process of shotcrete in the broad natural world of landscape. So, from the beginning, through present day, shotcreting has been used as a means to help one represent and maintain elements of the natural world.

In the natural world and landscape design, a core element is water. In fact, it may be the key element. Flora and fauna without water is an incomplete picture. For those of us who are watershape designers and builders (for example, ponds, pools, fountains, spas, and waterfalls), we sometimes think the watershape is the star of the show (a mistaken premise in the author's opinion), and that the surrounding elements carry a lower value. But, in the natural world, water must carry an equal relationship with other elements in the overall environment. Water must be presented in such a way that it takes no more than an equal footing with the other elements—landform, plant materials, ledge rock, boulders, and the sun. This balance is first achieved in the mind of the designer, but water poses an interesting challenge. Water always conforms to

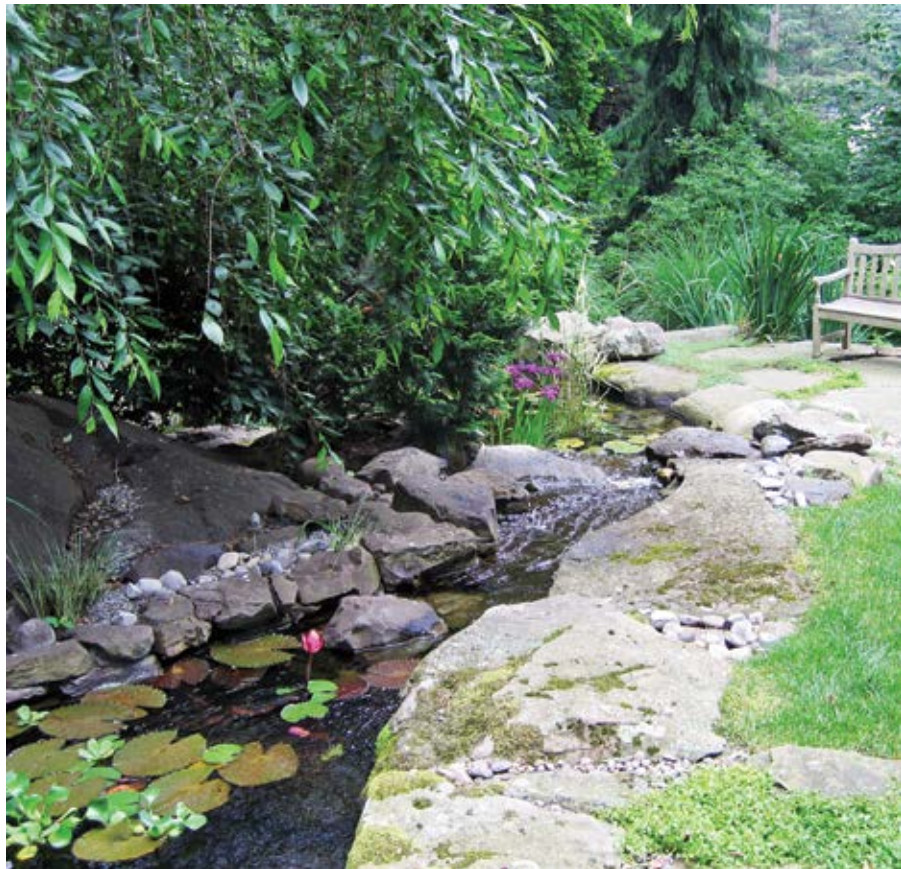


In this landscape, a spa was built against the base of an aged outcropping of ledge rock. Previous attempts had been made to create some sort of circulation down the side of the rock with poor results. Besides not having a basin large enough to catch the falling water, there were several crevices and natural seams in the rock that allowed too much water to pass for continued use. While the spa was being built, with a conjoined recirculation basin, attention was given to the ledge rock issues. Some of the crevices were carefully widened by machine and hand, and then steel-reinforced “patches” were shotcreted into place. Some of the offending seams were simply covered over during this process. Care was taken to protect the surrounding rock, and with some careful rock placement and “aging” techniques, the patches proved quite successful

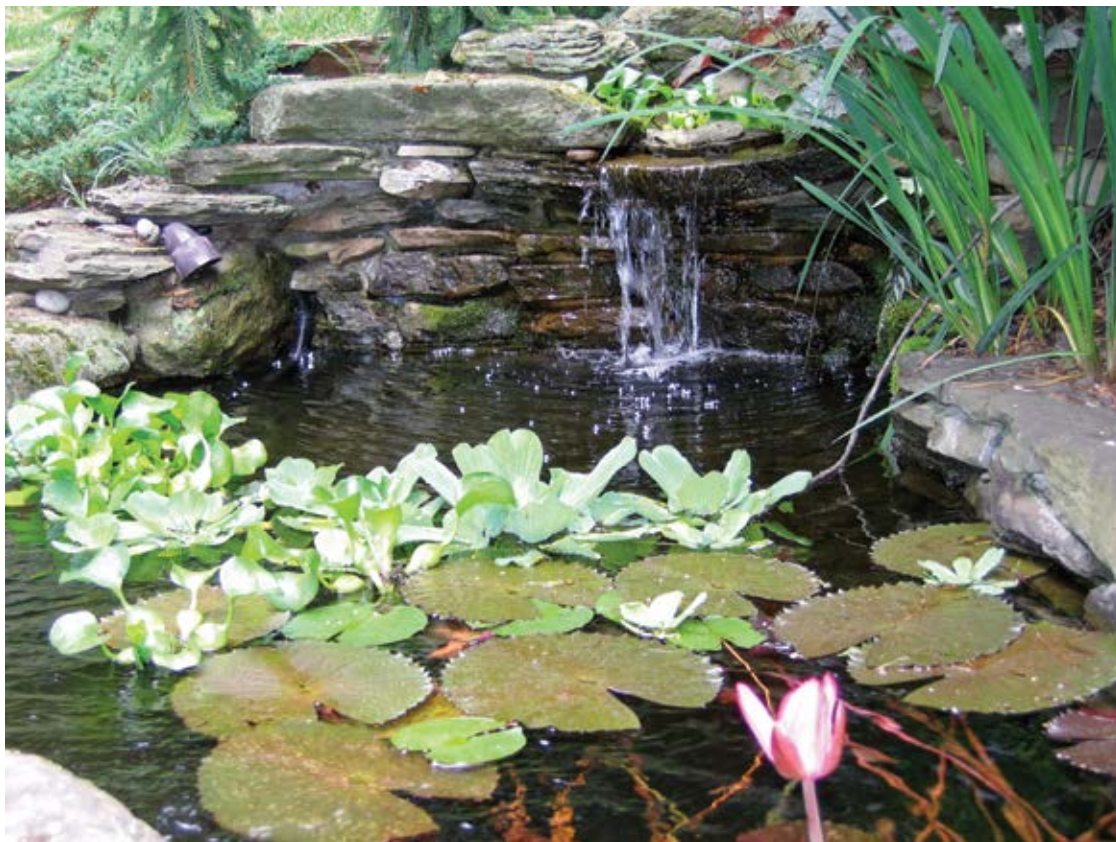
the shape and influences of the vessel it occupies. And in nature, this could be a shallow depression; a deep, still lake, over a rippling placement of stone; or in footprints left by an animal. This is where the value of the shotcrete process comes into play.

The shotcrete process has a long list of advantages that may already be known by the reader. For the landscape naturalist, there is a specific group of advantages that are appealing.

- Because shapes in landscape are often not regular, shotcrete's ability to be shaped into odd and irregular shapes is key. The ability to shape and carve it while in its plastic state is almost like a sculptor molding and shaping clay.
- The naturalist must consider practical matters when it comes to handling water. There are plastic or metal recirculation systems, stone that is used for features, bedrock that may be the base for the shotcrete, and cementitious finishes or coloring agents applied to the shotcrete. The shotcrete process does not alter the concrete's ability to marry well with these other materials. So, all the advantages of concrete are still available.
- Often the designer wants water to move over an existing channel or crevice of natural rock. To help create a watertight surface, shotcrete



For this garden water feature, naturally placed rock along with some masonry veneer was created in the rear of a residential property in a busy northeast city. In addition to its shaping abilities, shotcrete was selected as a means to combat the heavy freezing-and-thawing exposure the vessel would be subjected to. By digging to frost depth and installing a deep base of crushed stone, the shotcrete vessel has been leak-free for many years. The natural gunned finish was an easy way to create a suitable background for the interior spaces of the feature





In the world of landscape, formal gardens show one's desire for symmetrical beauty; really a marrying of architecture and nature. In a very real sense, formal gardens are an abstract representation of the natural world; in the same sense a fine artist works. Water, too, then becomes abstracted in the shape of the vessel created herein; a circle. The circle, although not natural, has its own beauty of the geometry. Of all the man-made materials, cementitious matrixes hold a special place with outdoor designers. Concrete, plasters, clay bricks, and other similar masonry matrixes are a bridge between nature and man's architectural world. After all, they all contain mostly natural material whose use dates back thousands of years. In this way, concrete carries a place of honor to the designer. Therefore the circular fountain basin, created through shotcrete, is not only correct for the way it presents the water, but for what it's made from

is used to fill voids and crevices, while not obscuring the natural rock that is meant to be seen. Here's where the high velocity of the shotcreting process assists in developing watertightness. The shotcrete process also accepts admixtures that work towards this goal such as crystalline waterproofers.

- The gunning process of shotcrete enables a rougher, gunned finish, which is helpful in landscaped environments. This roughness can appear natural as it weathers, has the ability to naturally collect silts, earth, and allow spots for moss to catch hold and grow. What we think of as a negative to some architectural environments, becomes a plus when it comes to nature!

So, when you think of the shotcrete process next time, perhaps you'll remember the artistry that it has allowed. And maybe, just maybe, the next time you're admiring a natural environment, what you see as a beautiful piece of nature had a team of skilled shotcreters in first.



James Scott is a third-generation Watershape Designer and Builder who has worked in the swimming pool and landscape industries for 39 years. He received his BS in business and accounting from Southern Methodist University, Dallas, TX. Through Group Works LLC, Scott has aligned himself with Genesis 3 and other organizations that focus on continuing education and increasing higher standards in the watershape industry. He is a Platinum Member of Genesis 3 and a certified member of the Society of Watershape Designers. Scott is also an APSP-Certified Professional Builder and an ASA member and has trained with the Portland Cement Association. Scott and Group Works LLC have been featured in regional and national publications.