2005 Outstanding Pool & Spa Project:

Vanishing Edge Pool

by Bill Drakeley

Upon our first meeting with the clients, I could sense that this was going to be an exciting installation. The Bernsteins invited our company to their house because of some great references we received from past clients who were friends with our hosts. The owners live on the top of a hillside, with a fantastic westerly view into New York State from Connecticut. This waterscape, as we discussed, had to have all the normal amenities: lap swimming, lounge areas, benches, varying depths, entry and exits. What they also wanted was an enhancement of the current view and a naturalistic feel for the yard. This feature had to be more than a single season asset. It had to lend itself to all changes in the weather.

Vanishing Edge Pool, New Milford, CT

Attention to detail in the areas not visible when enjoying the watershape are just as important. The lower pool or surge trough is completed in the same materials as the main pool

As specialists in pool and watershape design, our company tried to combine functionality with great aesthetics. The vanishing edge pool for the Bernsteins incorporated all the desires of an active family with a three to four season approach that enhanced the view from all angles of the house interior.

The shotcrete process enabled us to bring the project from concept to reality. The shotcrete segment of the edge pool was the structure itself. Installation of the shotcrete entailed all aspects of high-end pool construction. The hillside on which the pool was installed had a slope in excess of 30 degrees. This type of site does require additional support encompassing the forming, steel, and shotcrete schedules.

We over-excavated the floor and walls to allow for additional drainage stone under the shotcrete shell. Typically 12 in. (300 mm), we installed 2 ft (600 mm) of stone. Because the downhill side of the pool would virtually be out-of-ground, we tried to relieve as much ground water accumulation as possible. This will minimize freezing-and-thawing movement in the winter and spring months. The steel installation encompassed No. 4 and No. 5 reinforcing bars, 6 in. (150 mm) on center throughout. At the base of the edge wall and edge trough is an extended footing that reaches into the soil below the frost line. The reinforcing bar was pre-bent and configured to fill the area. This footing is part of the shotcrete placement to stabilize the lower hillside for the structure, not only from ground movements from the freezing-and-thawing process, but the overall loading of the pool by the weight of the water.

The shotcrete installation was approximately 80 yd^3 (61 m^3). The shotcrete was a cement-rich mixture, 800 lb/yd^3 (475 kg/m^3) cement with 3/8 in. (9.5 mm) stone and 10% air entrainment with a 3 to 4 in. (75 to 100 mm) slump. Special attention to detail was required for the edge wall. Drakeley Pools currently has the only three certified nozzlemen in Connecticut trained in this type of construction process. Our nozzlemen shooting the walls knew that the edge tolerance for the spillway wall had to be ±1/8 in. (±0.8 mm) at time of placement. Correct water flow and the

Outstanding Shotcrete Project Award Winner

A view of the edge wall shows the finish materials in place. Tolerance for the edge wall upon completion of the tile is ±1/32 in. (1.5 mm). The flow of water over the edge is minimal if executed properly

Plants help soften the transition in elevation and also frame the edge wall

A westerly view of the pool area shows the drastic slope of the building site. In the shadows of the edge wall is a foot ledge that continues the length of the pool

whole success of water in transit were contingent on proper placement. Expected tolerance of 1/32 in. (1.5 mm) is the standard set by the tile installers.

The significance of the shotcrete work to the project is profound. The application of concrete via the shotcrete process solves a litany of construction challenges: site slopes; differentiating thicknesses of the floor, including attached footings; radius edge spillway; radius edge surge trough; and varying elevations.

Access was limited and forming would be challenging in conventional concrete placement. The shotcrete process allows industries such as the in-ground pool industry not only to survive, but thrive.

Other construction methods would be undesirable and impractical. In our opinion, this pool shows that the shotcrete process really has no limitations when it comes to structural and recreational water use. The homeowners continue to be very pleased with their new outside living space and proudly show it off. As a business owner, there is no better way to promote our product than that.

Outstanding Pool & Spa Project

Project Name
Vanishing Edge Pool

Project Location
New Milford, CT

Shotcrete Contractor
Drakeley Swimming Pool Company

Project Owner
Brad Bernstein

Architect/Engineer
Drakeley Swimming Pool Company

Material Supplier
O&G Industries

***Bill Drakeley** is President and Owner of Drakeley Industries and the Drakeley Swimming Pool Company design build firms in Litchfield County, CT. A third-generation pool builder, Drakeley is a Genesis 3 Platinum Member, an ACI Certified Nozzleman, and a member of the American Shotcrete Association (ASA) Pool and Spa Committee. Drakeley Swimming Pool Company is a Corporate Member of ASA.*