

Certification Lessons Learned from the Pool Industry

By Jason Vaughan

When asked to write an article for ASA's *Shotcrete* magazine, it took me awhile to figure out what a small-town pool builder from the mountains of Virginia could share with some of the best shotcrete minds in the world. As someone who is a third-generation pool builder and has worked in all phases of pool construction, including our dry-mix shotcrete (gunite) crews, I have always taken pride in knowing we build quality pool shells. My family-owned company has been in business since 1978 and we have always placed the shotcrete on every pool we have built. In meeting people from across the country

in the pool industry, this seems to be relatively rare for a pool company to have both the equipment and the expertise to shoot their own projects. I am proud to say we own four dry-mix shotcrete rigs with four ACI Certified nozzle men including my brother Austin, my stepfather, and my stepbrother, who all work for our company. With the exception of Bill Drakeley (who was one of our ACI examiners) and a handful of others, not many pool builders are as knowledgeable as they should be about proper shotcrete installation. Bill's efforts to bring shotcrete education to the Genesis 3 program as well as the national and regional



Fig. 1: Dry-mix shotcrete being applied to catch basin wall from inside of the pool due to space in catch basin (Willie Johnson, NP Superintendent, ACI Certified Nozzlemaster)

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pool tradeshow is a great start to increasing the quality of concrete pool construction, which I appreciate. Even with the experience in my own company, we have learned a lot in the past 10 years about proper techniques through classes taught by Bill and the ASA Education/ACI Nozzleman certification program.

As an example of one of our projects, herein is one we built in 2012. Our company was contracted to construct a 25 x 50 ft (7.6 x 15 m) pool for a residential client at the top of a mountain. The pool was designed to be 3 ft-6 in. (1.1 m) deep on the shallow end and 8 ft (2.4 m) in the deep end. It had a large set of steps in the shallow end and a standing ledge along the deep-end wall. To take advantage of the panoramic view, the pool also had a vanishing edge along half of the pool and created a 75 ft (23 m), three-sided disappearing edge. The vanishing edge also had a lower catch basin that was 30 in. (0.76 m) wide and 3 ft (0.9 m) deep. All of the walls on the pool were 12 in. (0.3 m) thick dry-mix shotcrete and used about 50 yd³ (38 m³) of material to shoot. The pool also included a floating automatic cover, which

required a 4 x 5 ft (1.2 x 1.5 m) housing to be created on the shallow end of the pool. This was a fairly complicated shoot due to the length of vanishing edge wall with the attached catch basin, as well as the recessed cover housing and motor compartment. The interior of the pool was plastered with a black quartz plaster to give a reflective quality to the pool overlooking the valley below.

Lessons Learned from the ASA Nozzleman Education Program

1. Curing of the shotcrete/concrete is a very important step. Proper hydration can help reduce issues such as plastic shrinkage cracking during hot weather. Also, drying shrinkage increases with additional water content so adding excessive water to the shotcrete mixture only decreases the strength and causes additional problems.
2. We found the use of a blowpipe very useful to eliminate rebound in unwanted places. This was something we had heard of but had not implemented until taking the nozzleman



Fig. 2: Shotcreting the exterior wall of the vanishing edge catch basin before edge wall is formed and shot

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Fig. 3: Catch basin for vanishing edge before finishes



Fig. 4: Pool shell complete before tile and coping installation



Fig. 5: Floating automatic cover being retracted into hidden cover housing



Fig. 6: Completed pool with three-sided vanishing edge

course. It helped us to maintain quality of shotcrete placement, especially in tight spaces and complex installations.

3. Application techniques were also reinforced in the certification class. The position of the nozzle relative to the surface and the mixing process that occurs with the movement of the nozzle can greatly improve the quality of the in-place shotcrete as well as reduce rebound.

In the pool structure, wet- or dry-mix shotcrete is the backbone of concrete pool construction. There is not enough tile or plaster that can cover up a poor shotcrete installation. Most structural and aesthetic issues from cracks or efflorescence can be traced back to a bad shotcrete job. What is hard for me to understand is: why don't more pool builders know more about the process? What is rebound? Why is it bad? What concrete strength should be used in a pool installation? What are the proper nozzling techniques? These and others are all questions to which good pool contractors must know the answers. There is much more to quality shotcreting than simply holding on the end of a hose. I also have had a hard time with pool consultants giving me grief about accepting the dry-mix process only because they had someone do a bad job in the past. It's not the product at fault—just the application. I encourage all pool contractors, from small to large, to become more involved and more educated about shotcrete so the quality of pool construction continues to get better over time.



Jason Vaughan is President of National Pools of Roanoke, Inc., in Roanoke, VA. National Pools is a design-build gunite pool builder that services both the residential and commercial pool markets in Virginia and West Virginia. Vaughan is responsible for the design and project management of the majority of the projects built by National Pools for the past 18 years. Vaughan is an active member of the Association of Pool and Spa Professionals (APSP) where he serves as a local Chapter President, regional committee member, and an APSP WAVE Young Professionals Network committee member. His pool industry certifications include Certified Building Professional, National Plaster's Council Start-up Technician, and Certified Service Technician.