ASA's Contractor Qualification Program

By Marcus von der Hofen

As 2018 begins, the ASA Contractor Qualification Committee is putting the final touches on the Contractor Qualification program slated to premier this spring. After years in the making, fulfilling the goal of creating a program is just the first step. Implementation can proceed down various paths, but the focus should always be on strengthening the shotcrete industry as a whole.

In 1998, the American Shotcrete Association (ASA) was formed by a group of shotcrete industry leaders with the mission of promoting the use of shotcrete. As part of this endeavor, it laid the educational foundation for a functioning Nozzleman Certification program. In 2000, the American Concrete Institute (ACI) established a formal Nozzleman Certification program through its Committee C660, which is regulated through ACI's Certification Programs Committee's standard procedures. ASA now is the primary sponsoring group conducting ACI nozzleman certifications and continues to increase the quality of the education process.

The ACI certification program was designed to be at a "baseline" level. The nozzleman receives his certificate for each process and orientation if he succeeds in the written and the performance exam. The ACI certification was not intended to be the most rigorous possible exam to cover all possible types of shotcrete placement. There exists a wide spectrum of shotcrete applications, construction practices, shotcrete processes, performance requirements, and geographic differences. Correspondingly, there exists a wide range of project needs from basic shotcrete to more complex needs requiring more sophisticated experience and workmanship. No certification program can address all potential variables.

The ACI nozzleman program is focused on certain and specific key elements (knowledge, skills, and abilities) deemed by knowledgeable committee and industry members to be the most essential for common applications. It consists of a general knowledge written examination and a performance examination that includes shooting an actual test panel containing reinforcing steel. The test panel is 30 in. square by 3.5 in. deep (750 x 750 x 90 mm) and contains a single layer of different sizes and varyingly spaced reinforcing steel. The panel is "basic"—it does not simulate deep sections, or multiple layers of reinforcement or obstructions. The nozzleman candidates are graded on their application techniques during the shooting of the panels. After hardening, the panel is cored for further evaluation of nozzleman skill based on the quality of encapsulation of the reinforcement. Thus, the program verifies that every certified nozzleman knows the basics of both general knowledge and performance technique and, therefore, has the potential for doing a satisfactory job.

Many specifiers have mistakenly relied upon nozzleman certification as an all-encompassing credential that equates to the nozzleman to being competent to shoot ALL types of shotcrete applications. This is not the case. Though nozzlemen must have a minimum of 500 hours of nozzling experience before applying for certification, many nozzlemen's base experience may be quite different from that required for specific projects. For example, a nozzleman might be extremely competent in dry-mix overhead work on parking garage repair (very difficult) but have little experience in bench gunning or water feature work (many are misled to believe this work is easier but it is not). The similarity of the work makes a big difference.

The qualifications of the shotcrete contractor by previous performance on similar projects should be specified in the contract documents. Because the role of quality control is typically the responsibility of the contractor, their knowledge, experience, and support of the nozzlemen and shotcrete crew is vital to the success of the project. Contractors with limited experience in specific applications may not afford the support necessary, and have difficulty achieving the overall concrete quality required. The specification should consider the length of time the contractor has been in business, the quantity and magnitude of past projects, and the current level of expertise of the management and crews.

Specifiers may find it difficult to delineate the necessary components of a shotcrete qualification requirement. As a result, the specifier may be hesitant to try to thoroughly evaluate the shotcrete contractor's equipment, crews, and resources. This may lead some specifiers to simply accept

a contractor's submittal for experience without looking at it critically.

The ASA Contractor Qualification program allows ASA to do the "heavy lifting" for the specifier in evaluating these checklist items that help to quantify a contractor's shotcrete experience. ASA has shotcrete experts (contractors, engineers, suppliers, and educators) who will review and verify contractor submittals in all these checklist areas. Members of the ASA Contractor Qualification Committee (CQC) will also talk with the contractor and key personnel to verify the provided information, as well as check with all the supplied project references.

ASA provides Shotcrete Contractor Qualification as a service for shotcrete contractors, owners, and specifiers. The CQC receives submittals from contractors wishing to be evaluated. The contractor must specify what level of qualification (basic or advanced) in which they desire to be qualified. The CQC reviews the contractor submittals that detail the contractor's shotcrete experience. Upon completion of the review, the CQC would provide the contractor a certificate of qualification in either the Basic or Advanced categories. Specifiers are encouraged to require the ASA Shotcrete Contractor Qualification for their specific projects, selecting the appropriate level of qualification based on the difficulty of application.

TWO LEVELS OF QUALIFICATION

There are two levels of qualification: Basic and Advanced. Each level is established by the type and scope of shotcrete work the contractor has previously successfully executed. The contractor must specify in their application the level (basic or advanced) that best describes their work. The contractor will be evaluated based on the level the applicant submits.

- **Shotcrete Contractor (Basic)**: A company that has attended an ASA sponsored 1-day seminar on basic requirements for the shotcrete contractor and can document successful completion of at least 15 projects in the last 3 years that qualify as basic projects.
- **Shotcrete Contractor (Advanced)**: A company that meets all the requirements of the basic level and can document successful completion of at least 15 projects in the last 5 years that qualify as advanced projects.

As with the Nozzleman Certification, the two classes are considered "baseline" to their level. As before with the Nozzleman Certification, it cannot and should not be used as a replacement for documentation of previous projects of similar size and scope in a project specification, such as tunnels, pools, or foundations. Its purpose is to establish minimum levels of contractor requirements for those pursuing work in the shotcrete field.

As with all programs, whether they are educational programs, sports programs, or community programs, they are never perfect from the start. Our program will undoubtedly need adjustments, and will evolve over time. I believe complementing the ACI Nozzleman Certification with baseline ASA Contractor Qualifications will be greatly beneficial to the shotcrete industry in the long run.

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