

ACI Shotcrete Nozzleman Certification and the American Shotcrete Association *by Jean-François Dufour*

As a member of the American Shotcrete Association (ASA) since its inception, and as a member of the shotcrete industry for even longer, I have been an active participant in the debate over the importance of shotcrete nozzleman certification. For years, very few throughout the industry disagreed with the need for a nozzleman certification program. The vehicle by which a certification program could be delivered, however, was argued and debated by industry members everywhere!

American Concrete Institute

In 1997, the American Concrete Institute (ACI) established ACI Committee C 660, Shotcrete Nozzleman Certification, with the mandate to develop, maintain, and update programs for use in the certification of persons performing as shotcrete nozzleman. As Chair of this committee, it is my pleasure to announce that this certification program is now fully operational, and since its launch at the World of Concrete in Las Vegas in 2001, almost 300 nozzlemen throughout North America have been granted certification by ACI.

For years, the shotcrete industry has recognized the need for stringent standards with respect to the quality of the shotcrete process. In addition to good quality, well-proportioned shotcrete mixtures and suitable equipment, shotcrete nozzlemen are certainly a key element in this process. ACI Committee C 660 has delivered a credible and thorough program with strict policies, guidelines, and procedures that respond to the demands of our industry. A select group of experienced and acknowledged shotcrete experts have been approved by ACI to act as examiners for the certification program. Today, certification of a shotcrete nozzleman through this ACI program provides nozzlemen with not only improved knowledge and skills but also with international recognition as craftsmen.

Although no certification program can address all potential variables, this ACI shotcrete nozzleman certification program is focused on specific key elements of the shotcrete process, such as knowledge, skills, and abilities. To achieve certification from the ACI program, candidates must fulfill the following requirements:^{1,2}

- Have at least 500 h of verified work experience as a nozzleman or nozzleman-in-training;
- Achieve a passing grade on the 90 min. written examination; and
- Successfully complete the following two-part performance evaluation:
 1. Part I—Demonstrate knowledge of all the items covered in the Performance Checklist
 2. Part II—Shoot a test panel with the method(s) and position(s) to be certified. The test panels are cored in five predetermined locations (through reinforcing). The cores are then evaluated for a “shotcrete core grade” as per ACI 506.3R.

The certification program is available for both dry- and wet-mix shotcrete methods and for two shooting positions: vertical and overhead. The nozzleman must qualify in the vertical shooting orientation, and may elect to qualify in the overhead shooting orientation, in either the dry- or wet-mix shotcrete processes, or both.

Very soon, this international certification program and its supporting literature (study materials and written examination) will be available in three languages: English, Spanish, and French.

American Shotcrete Association

How did ASA become involved with ACI with respect to this aforementioned ACI shotcrete nozzleman certification program?

ASA was founded in 1998, and one of its committees, the Education/Certification Committee, focused on the development of a shotcrete

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nozzleman *training* and *certification* program that would comply with ACI's strict policies, procedures, and examinations requirements. At that time, it was well recognized that the shotcrete industry was in need of such a program. However, ACI Committee C 660's program had not yet been completed and, therefore, there was no officially approved shotcrete nozzleman certification program available through ACI's Certification Programs Committee (CPC).

As a result, through the tireless efforts of its committee members and other industry experts, the ASA Education/Certification Committee launched its first and very successful shotcrete training and certification session in Streetsboro, OH, in September of 1999. This session also served to qualify examiners and helped to refine both the upcoming ASA training program and ACI certification program.³

Since that first session, many public and private ASA training and certification sessions were completed throughout North America (Minneapolis, Orlando, and Toronto, among other cities) until ACI took over the certification program early in 2001. A total of 42 nozzlemen have been certified under the ASA banner. However, initially none of the successful candidates were considered to be certified by ACI. This became a serious issue on several occasions when ACI certification began to commonly appear as a basic requirement in construction project specifications where shotcrete was required.

This issue, brought forth by ASA, was acknowledged by ACI Committee C 660, which brought the issue before ACI's CPC for consideration. As a result, this concern was addressed and ACI now recognizes ASA-certified shotcrete nozzlemen. Recently, ACI's Managing Director of Certification, John Nehasil, issued a formal letter in which he offered the following statement:

"The American Concrete Institute (ACI) has determined through review that American Shotcrete Association (ASA) Shotcrete Nozzleman Certification program under which ASA certifications were issued was equivalent in scope, content and administrative policy to the current ACI Shotcrete Nozzleman Certification Program."

This letter also states that while no formal ACI credentials will be issued to the individuals certified by ASA as shotcrete nozzlemen, a copy of the letter (www.shotcrete.org/ASAcertification.htm) will be sufficient to verify the equivalency of valid ACI and ASA credentials. All successfully completed ASA certifications were valid for a period of 5 years and will therefore

expire no later than the end of the 2004 calendar year. The ASA shotcrete nozzleman certification program has now been discontinued; therefore, all ASA-certified individuals seeking recertification will be directed to the ACI Shotcrete Nozzleman Certification program.

Let's Avoid Confusion Between ACI and ASA!

If it is not already clear, it is time now to differentiate both organizations in terms of shotcrete nozzleman certification. The simplest way to accomplish this is to state: *ASA trains, ACI certifies!*

As with any other ACI certification program, examination sessions are conducted by local sponsoring groups (LSGs). Although most ACI certification programs are typically administered by local ACI chapters approved as LSGs, shotcrete nozzleman certification programs require a higher degree of logistics, exceeding most ACI chapters' resources. Given the history of ASA in this program, they were the first LSG to be approved by ACI for administering a shotcrete nozzleman certification program. As a national organization, they continue to sponsor certification activities, but ONLY if candidates have been through an "ASA-approved training program." In other words, ASA has made the shotcrete training program mandatory when they administer an ACI Shotcrete Nozzleman Certification session. Thus, ASA-approved examiners/trainers (who are also ACI-approved examiners) provide shotcrete training sessions to the candidates to prepare them for ACI Shotcrete Nozzleman Certification.

This ASA training program consists of a series of concrete/shotcrete-related technical modules such as: introduction to shotcrete, history of shotcrete, shotcrete materials, shotcrete mix designs, quality control/quality assurance, shotcrete equipment, preparation for shotcreting, shotcrete nozzleing and application techniques, shotcrete finishing and curing procedures, and safety. There is also a module for shotcrete for swimming pools and spas⁴ for nozzlemen in this industry.

In summary, to participate in an ACI Shotcrete Nozzleman Certification program, the interested parties should first contact ASA. As a LSG, ASA will provide the necessary information on both the ASA training program and the ACI Nozzleman Certification program. They will then process the inquiry and contact ACI-approved examiners to coordinate the certification program. To

download an application for shotcrete nozzleman certification, go to: www.shotcrete.org/ASAcertification.htm.

A Message to Shotcrete Specifiers!

The last ASA magazine's cover⁵ displayed an old ACI 506.3R document, "Guide to Certification of Shotcrete Nozzleman." This particular document no longer exists and should not be confused with the ACI C 660 Shotcrete Nozzleman Certification program's current policies and procedures.

It is also important to understand that ACI Shotcrete Nozzleman Certification does not guarantee perfection! Like any other certification in any field, it only provides the specifier with the assurance that the employee has demonstrated the required knowledge and capabilities to properly perform the work. To ensure a quality shotcrete application, preconstruction qualification and simulation of jobsite conditions should be required on specific projects as needed (for example, deep sections and multiple layers of reinforcing). To assist design professionals, owners, contractors, and other construction personnel in achieving desired quality, there are procedures for qualifying shotcrete nozzlemen where project requirements may have special features that dictate more than just ACI certification. A revised guide (which will replace the aforementioned "Guide to Certification of Shotcrete Nozzleman," ACI 506.3R-91) is being developed. It will outline these procedures⁶ and should be available soon.

Specifiers, this ACI Shotcrete Nozzleman Certification program has been developed for you. Take advantage of the tool you have been given

and specify ACI Certified Shotcrete Nozzlemen on your construction projects!

References

1. "Program Information," ACI C 660 Shotcrete Nozzleman Certification.
2. "Certification Policies for Shotcrete Nozzlemen," ACI C 660 Shotcrete Nozzleman Certification.
3. Isaak, M., "Certification vs. Qualification of Shotcrete Nozzlemen," *Shotcrete*, V. 4, No. 4, Fall 2002, pp. 40-42.
4. "Shotcrete Corner," *Shotcrete*, V. 5, No. 2, Spring 2003, p. 40.
5. *Shotcrete*, V. 5, No. 3, Summer 2003, cover.
6. ACI Committee 506, "Guide to Qualification of Shotcrete Nozzlemen for Specific Projects," revision of ACI 506.3R-91, proposed draft.



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