

So You Want to Be A Nozzleman?

By Marcus H. von der Hofen

American Concrete Institute (ACI) Nozzleman Certification, experience, qualifications, core grades, and written tests are all used to establish a nozzleman's ability to understand and apply shotcrete. But do they actually ensure a good job? What really makes a good nozzleman? For nearly two decades, I've been lucky enough to work with some of the most successful nozzlemen on the West Coast and I have found that certain (often overlooked) qualities greatly influence a nozzleman's ability to consistently produce excellent work.

What do I mean by successful? In my experience, being successful is far different than having the ability to encase reinforcing bar for a test panel. Success is actually many things combined. It is the ability to do quality nozzling repeatedly and consistently throughout a workday and over the course of a project. True nozzlemen understand that they play a great role in a project's success by working in tandem with their crew members and controlling the pace of the job. I could go on and on about what good nozzlemen do, but this article will focus on some key elements for a beginning nozzleman to start with.



Balance and Energy

If you don't master this concept, you have zero chance of becoming a top nozzleman. It's a very simple fact that no one is strong enough, tough enough, or big enough to physically fight the hose all day long during production. Work on getting into a good position where you can control the hose through the mass of your body and not just with your muscles. This is especially important with wet-mix shotcreting due to the weight of the material hose. As the hose surges, the energy is transferred to your body, not your arms. The best positioning of the hose is from the ground up between your legs and in front of your body, where the weight of the hose is supported by its rigidity. As the hose surges, its force is transferred to your legs, midsection, and chest. Your arms are then used more for guidance, thus minimizing the strain on them and your lower back.

Also important to achieving good balance is positioning the nozzle length in a manner that places its natural contour in harmony with you. Depending on how the hose is twisted and how the nozzle is positioned relative to this twist, you can end up fighting the hose and wasting energy. Adjust the nozzle and nozzle length to minimize this issue. Where the hose lays on the ground, keep a loop out in front of where you're going. This will minimize the dragging of the hose, which wastes energy, and allow a hose puller to drag more hose to where you are moving, reducing wear and tear on you—the nozzleman. As you know, shotcrete nozzling is hard work and everything you can do to minimize your fatigue will translate into better consistency in your placement over the long haul.

Placement Control by Distance

One of the big differences between a beginner and a more experienced nozzleman is the ability to control shotcrete placement by manipulating the nozzle distance from the receiving surface. If conditions were always the same, you wouldn't have to do this much, and sometimes that's the case; but with most of the jobs I see with multiple curtains of reinforcing, inside and outside corners,

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and finish requirements, it's imperative that the nozzleman has the ability to control the placement by changing the nozzle distance. As material is placed around reinforcing in the back of the area, a good nozzleman can move in closer with the nozzle to increase the ability of the shotcrete to flow around the reinforcing bar. He will then draw back with the nozzle to increase the pattern size and spread out the energy, creating consolidation over a larger area while not disturbing the material he has placed behind the bar. This is a simplification of the process, but I find that all nozzlemen that consistently place well-consolidated material around challenging steel conditions possess this skill.

It is important to place material consistently close to finish grade. Controlling your placement by adjusting your distance is very helpful in that endeavor. It allows a nozzleman to move in, get around the reinforcing bar, and back out to smooth the finish and control the shape of the receiving surface. Two things are happening here: 1) more energy in a tighter pattern causes better flow around the bar; and 2) a bigger pattern with the energy dispersing over a larger area creates a more consistent surface.

You have a lot to deal with as a nozzleman and your ability to control that nozzle to get things done consistently takes practice, so work on your technique of nozzle distance control.

Attitude is No. 1

Before I started writing this article, I sat and chatted with my longtime friend Mike Norton, a

nozzleman who has worked with both wet- and dry-mix shotcrete for more than 30 years. We both agreed that the most important thing we look for when deciding who to try and develop into a new nozzleman is attitude. You have to want to be good at this. You have to want to be a professional. You have to be willing to learn and grow from experience to be a good nozzleman. You and your attitude set the tone for the crew, and if you are not capable of being that kind of person, you should look for something else to do.

My job has never been at the end of the nozzle, but for many years I have had to determine and then rely on the person who is. I have seen them come and go—both good and bad—but the true “top guns” want and earn the respect of the people they work with.



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