

Choosing the Right Method

by Ted W. Sofis

I've been doing gunite work—dry-process shotcrete—full time for over 33 years. That does not include the summers I spent during college shoveling sand and breaking bags into the mixer for feeding an old Jetcreter gunite machine. I have worked on large industrial installations on blast furnaces, metal mixers, soaking pits, and ash hoppers as well as maintenance work on burners, ladles, boilers, and blast-furnace troughs. My company has done concrete repair work on bridge piers, abutments, dams, spillways, and large tunnels.

So it's safe to say that in the past 33 years I have encountered a vast array of shotcrete projects. I've seen the advent of wet-process shotcrete and was even involved in a few installations in the early years. The wet process has certainly come a long

way since then and in many installations is the better method. With the wet process, you can install greater volumes in less time.

For the dry process, there are many advantages in refractory and concrete rehabilitation work. I couldn't imagine gunning small overhead patches as efficiently with the wet process as we do with the dry process. Gunning the thin refractory lining on the throats of power-plant burners with the same amount of control would not be as easily achievable. The stop-and-go nature of those types of repairs just works better using the dry process. In the same vein, it would make little sense to gun foundation walls or soil-nailed walls using the dry process when the wet process can place greater volumes more efficiently. For wide-open volume work, the wet process has many advantages.

This brings me to the issue at hand. I recently saw a bid come out on a tunnel rehabilitation project in Pittsburgh, PA, where there were several scattered overhead concrete repairs; and the project was specified for only the wet process. Without getting into all the specifics of the project, I'd say the engineers obviously didn't understand the difficulties of this particular installation. The size of the repairs and the stop-and-go nature of such work just lends itself to greater efficiency with the control of the dry method.

Many installations can be done well using either method; and due to the efforts of the American Shotcrete Association (ASA), we are now seeing project specifications allowing the contractor to use either the wet or dry process. This is good for many reasons. It allows the market factors to come into play, because if one method lends itself to a more effective installation, it will show in the bid pricing. For instance, if there is a major advantage in placement rates by gunning with the wet process, it will lead to a more competitive bid. Conversely, I've bid repair work with the dry process against several contractors bidding with the wet process and have been consistently low. Providing good specifications and allowing the contractor to bid the project with the method that he is most comfortable with will ultimately lead to a better, lower-cost end product.

Since its beginning in 1998, ASA has done a remarkable job informing and educating those in



Dry-shotcrete installation at base of Two Lick Dam in Indiana, PA



Dry-shotcrete process job under Route 51 in Aliquippa, PA, in 2006

Shotcrete Corner



Dry-shotcrete process to repair a quench tower at the United States Steel, Clairton Works, Clairton, PA, in 2006



Dry-shotcrete work to a bridge abutment on the Western Maryland Scenic Rail Road in Cumberland, MD

the construction industry of the advantages of using shotcrete. It is no coincidence that the engineers writing the shotcrete specifications today are now also better informed. ASA provides a forum for discussion, technical papers, and project articles and answers shotcrete-related questions.

So whenever you aren't sure which method is better for your project, make sure that good specifications are written for both the wet and dry process and leave it open for either. In addition to getting more bidders, you will get a better, lower-cost job.



Ted W. Sofis and his brother, William J. Sofis, Jr., are principal owners of Sofis Company, Inc. After graduating from Muskingum College with a BA in 1975, he began working full time as a shotcrete nozzleman and operator servicing the steel industry and began managing Sofis Company in 1984. Over the years, Sofis Company has been involved in bridge, dam, and slope projects using shotcrete, as well as refractory installations in power plants and steel mills. Sofis Company is a member of the Pittsburgh Section of the American Society of Highway Engineers (ASHE) and the American Shotcrete Association. Sofis resides in Pittsburgh, PA, and has over 33 years of experience in the shotcrete industry. He serves on the Board of Directors of the American Shotcrete Association and is a member of the ASA Publications, Education, and Marketing Committees.