

The Clamp That Failed

Job-Site Safety is More Than a Hard-Hat Sticker

By Derek Pay

The shotcrete world can be dangerous. A few summers ago, I was on break beside the wet-mix shotcrete pump during a long day of nozzling. It was very hot. As usual, our projects require layout of a considerable amount of 4 in. (100 mm) steel placement line—a routine task for our crew. We know that very high pressures are necessary to convey materials through long placement systems and we prepare them carefully. Between loads, the pump operator advanced the material a few strokes. The pump strained, and unexpectedly, a large clamp failed, and the system burst. I had been cleaning my safety glasses and had no eye protection. I was blasted by shotcrete in the face with incredible force and was extremely lucky to not damage my face or eyes.

You never know when unforeseen accidents may happen. This was a reminder of the importance of safety requirements. As the proverb goes, “better a thousand times careful than once dead,” and safety doesn’t happen by accident.

A little over 3-1/2 years ago, our company acquired a small local shotcrete company from the Salt Lake City, UT, area to complement our shoring division. The acquisition included specialty placement equipment to complete smaller projects such as swimming pools, small shoring walls, and seismic upgrades. Over time, we have invested in more equipment, man power, and

training to allow our company to satisfy this region’s diverse shotcrete needs. Our scope of work includes stamped architectural shotcrete walls, soil nail walls, shoring, underground parking structure walls, seismic upgrades, shotcrete tunnels, canals, and carved rock features.

Our company’s “learning curve” from mainly residential work to larger-scale projects has been challenging, and requires us to be compliant with all shotcrete safety rules and regulations. We have also been subject to specific safety requirements from multiple general contractors. Many of these contractors go above and beyond OSHA regulations to maintain a safe working environment for everyone on the job. It has been a trying task coming from a small “Mom and Pop” shop and transitioning into the world of commercial construction.

In early 2012, we hired an outside consultant to help us refine our shotcrete placement division. After setting up our equipment for a shotcrete placement mockup, he noticed safety errors that could potentially cause damage. He spoke to us about safety issues and legal ramifications that can arise when safety oversights occur. It became clear that many accidents are not accidents, but preventable, through well-proven safe practices.

Unfortunately, many of us learn the shotcrete craft through experiences that have provided an acceptable outcome over time. Past employers, coworkers, and outside opinions influence nearly all decisions that must be made by the work crew daily. Many times, critical safety oversights occur



Fig. 1: The importance of safety in the shotcrete world: a 5 x 4 in. (125 x 100 mm) heavy-duty reduce fitting with broken heavy-duty ring



Fig. 2: Daily checklists are a must in preventing injuries. Heavy-duty clamp cracked at the hinge joint

Safety Shooter

because workers do not possess the risk-specific training necessary to make the right choices, allowing accidents to happen. The clamp that failed was not inspected for damage prior to its failure. Are yours? We have learned that adopting strict safety policies that mandate inspection of all pressurized components for wear, cracks, or damage can reduce, but not eliminate, hazard.

Since completing the class, we have implemented a daily safety checklist enforcing strict guidelines that improve worker safety. The checklist includes clamp checks, pinched rubber checks, reducer lining checks, nozzle cleanliness verification, whip checks, weekly “tool box” meetings, and a daily mechanics safety check on the shotcrete pump and air compressor. By doing this, we are taking the proper preventative care to minimize worker risk. Our safety program reinforces our commitment to maintain a safe work environment for everyone on the job site. Shotcrete can be dangerous work. Safety is far more than a

compliance form and a hard-hat sticker. Knowledge is the first defense to safety. And as the proverb goes, safety shouldn't happen by accident.



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