

A *Shotcrete* feature:

SAFETY SHOOTER

Rigging for Shotcrete

By Ted W. Sofis

I am not going to talk about hardhats, safety glasses, or hearing protection. We use those items every day in shotcrete construction and they have been covered in past Safety Shooter articles. What I want to address is rigging. Whenever possible, it is quicker and easier to use man-lifts or snoopers (under-bridge inspection cranes) for access, but there are times where it becomes necessary to rig the structure. When you're on the nozzle and up high on a suspended scaffold, you are in a very vulnerable position. A plug in the hose or a surge in air pressure can suddenly throw you off-balance. Therefore, it's important to have a good, substantial, stable place to stand. When you're moving, it is always a good idea to have a helper with you, pulling the hose as you move, because when you are shooting, you are concentrating on gunning. Tugging on a hose, which can often hook on things or slip loose, can cause you to lose your balance. Always remember to securely tie off your hose. The hose can slip off the stage and pull you with it.

Everyone must be tied off at all times, with the appropriate safety harness and a shock-absorbing or retractable lanyard. Relying on a handrail set up behind you can give a false sense of security. Each worker must have an independent safety line; by independent, I mean a cable separate from the stage or platform on which you're working. That way, if anything should happen to the stage you are standing on, you are not tied to it—you're hooked to another safety cable. When hanging your cables, an allowance needs to be made to position yourself far enough away from the wall, pier, or abutment to be able to shoot it properly. Shotcrete is placed using high velocity, so you need to be at least 4 to 5 ft (1.2 to 1.5 m) away from the gunning surface to achieve a good spray pattern. No nozzleman wants to be right on top of what he's trying to shoot or to lean back against the stage's handrail to get far enough away to properly place the shotcrete. So when hanging your cables, keep this in mind. If you have no structure above you on which to hang your cables, you can use outriggers, which will provide enough distance from the shooting surface to apply the shotcrete efficiently. Be aware of the design capability of your rigging setup. The cables and



Rigging setup for access to bridge pier



Cable rigging under bridge super-structure

climbers should have an adequate safety factor built in for the mass the rigging is to support. Clean any rebound off as you go and do not let it build up on your stages. Rebound and over-spray can add a lot of unnecessary mass to the stages, so it's something

that you want to stay on top of. Keep your cables and climbers clean. Make absolutely sure all your men are safety trained for fall protection and follow all OSHA guidelines and safety rules. This is one job where your tool box safety meetings really matter.



Outriggers in place across the top of a dam with stages positioned to be rigged



***Ted W. Sofis** and his brother, **William J. Sofis Jr.**, are principal owners of **Sofis Company, Inc.** After graduating from **Muskingum College, New Concord, OH**, with a **BA** in 1975, he began working full time as a shotcrete nozzleman and operator servicing the steel industry. He began managing **Sofis Company, Inc.**, in 1984 and has over 34 years of experience in the shotcrete industry. He is an **ASA-approved Shotcrete Nozzleman Educator**, the **Treasurer for ASA**, and a member of the **ASA Publications and Education Committees**. Over the years, **Sofis Company, Inc.**, has been involved in bridge, dam, and slope projects using shotcrete as well as refractory installations in power plants and steel mills. **Sofis Company, Inc.**, is a member of the **Pittsburgh Section of the American Society of Highway Engineers (ASHE)** and **ASA**.*