

SAFETY SHOOTER

Forming: A Balance Act

By Chris Zynda, Director of Shotcrete Operations, Joseph J. Albanese, Inc.,
ASA President and Safety Committee Chair



The use of shotcrete for wall construction is becoming more popular every day as an alternative to cast-in-place walls. The forming systems being used for shotcrete walls are many in design, from metal to wood to others, but all have one very important safety concern: when they become tall, they can become unstable if the weight of the reinforcing bar and shotcrete is not properly taken into consideration when designing the forming system (Fig. 1).

The weight of the reinforcing bar is a major concern. The only thing that keeps it in place is the support of the forming system. A shotcrete form that is not braced properly could fail, falling backward or even forward toward the shotcrete crew, creating a major safety risk.

Figure 2 shows a shotcrete wall near completion. Now let's add the weight of the shotcrete to the weight of the reinforcing bar and consider the balancing act involved. If the form in Fig. 2 was not properly braced and fell forward, look at the danger to the crew below and the workers on the scaffolding.

Tall forms may need steel pipe braces to the inside to support the mass of reinforcing bar and shotcrete from overturning forces. This bracing needs to be placed strategically so that it does not hinder the shotcrete operation (Fig. 3). To help keep the bracing in place on the back side of the form, concrete dead men may be needed to help hold the bracing stable so there is no overturning of the installed system, including the reinforcing bar and shotcrete (Fig. 4).

Safety Tip: Always consult an engineer when designing any forming system.



Fig. 1



Fig. 3



Fig. 2



Fig. 4