

Crossing the Line

By Oscar Duckworth

It appears to possess a unique talent. No matter how I route my wet-mix placement system, it's always in someone's way. Actually, most of us share the same challenge. Soon after we lay out a hose, every piece of equipment within 10 miles needs to drive over it. Of course, most equipment operators don't ask—they just do it. A select few may drive over first, then ask if it's okay. Unfortunately, it's never okay. Any placement hose that is run over while under pressure can create a

dangerous bursting hazard that may cause injury or property damage if the hose fails.

Can a Placement Hose Be Driven Over When the Pressure Is Off?

Any empty-braided fabric or steel-braided placement hose rated for shotcrete use (1250 psi [8.6 MPa] or above) may be driven over by rubber-wheeled machinery without damaging the hose. A steel pipe (slick line) used to convey



Fig. 1(a): Hose section displaying inner liner area and braided fabric cords



Fig. 2(a): This nearly new hose has burst within days of being run over by equipment. Note the lack of external evidence of internal abrasion damage, as seen in Fig. 2(b)



Fig. 1(b): Interior view of inner liner failure caused by crushing



Fig. 2(b): Interior view of burst area

Technical Tip

shotcrete can be crushed or severely deformed if run over by larger-wheeled construction equipment. A dented or deformed slick line will quickly plug and have accelerated wear from the interior. Damaged slick line cannot be made safe—it must be discarded.

If a placement hose is not pressurized, but filled with concrete, it should not be run over. A placement hose's smooth inner liner can be permanently damaged by being run over, even once (Fig. 1(a) and (b)).

Angular coarse aggregates in the shotcrete mixture can pierce the placement hose's inner liner if the hose is crushed from its exterior. A small protrusion or tear in the inner liner will allow pressurized shotcrete mixture into and through the hose's vulnerable inner braided area. Occasionally, a bubble on the hose's exterior will give a warning signal of a pierced inner liner.

More often, the line will simply burst without warning days or weeks later, right at the point of the original damage (Fig. 2(a) and (b)).

If Possible, Disconnect the Line and Let Equipment Through

The best method to reduce damage is to be aware.

Relieve pressure, disconnect the line, and move it out of the way to allow equipment or vehicles

through. If crossing over a line cannot be avoided, place the line in a small trench or set timbers on either side of the line to help distribute the vehicle weight to the sides and not on the hose. Never allow an unprotected placement line full of concrete to be run over.

All job sites are busy job sites. When possible, relieve pressure, disconnect, and recouple the line. Protect the system from damage by using common sense measures. Time and effort spent protecting the placement system from equipment damage will save money in less frequent hose replacement and make the job site safer for everyone in the long run.



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