

# TECH NEWS

## TECHNOLOGY NEWS

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### Big and not-so-big digs

*By Neal Hawkins, associate director for traffic operations, CTRE*

Summertime, and the living is not easy for workers racing to get all of their underground work completed. Whether the project is large or small, underground work requires the right equipment and approach.

Now is a good time for engineers to get out in the field and learn about what's new.

### Directional boring or trenching?

Both trenching (open-cut construction) and directional boring (trenchless construction) can provide good results. Here are a few factors to keep in mind:

**Special considerations.** Directional boring simply provides more accuracy when working around conflicting utilities, and minimizes disturbances in tight or environmentally sensitive areas.

**Restoration requirements.** Today's trenchers have advanced vibratory tamping options that are significantly more effective and less labor intensive than earlier air tamping equipment. Therefore, in situations where the ground must be restored to grass but conflicting utilities or environmental considerations do not dictate directional boring, trenching is coming back into favor.

**Cost.** Most trenchless construction methods cost more than open-cut methods, even while reducing or eliminating restoration costs. Some related "cost savings," however, are not easily measured. For example, trenchless construction generally reduces dust, erosion, landscaping or tree removal, and other environmental impacts of trenching and eliminates dangers associated with open trenches.

**Partnership and efficiency.** Local agencies and engineers need to understand the pros and cons of boring and trenching. A continual discussion is needed among engineers, contractors, and manufacturers regarding the right balance of tools. In the best of all worlds, it is nice to have both options available,

### The versatile pothole machine

In addition to locating utility lines, pothole machines are useful for digging utility pole holes between big fiber optic lines, where there is simply no room for error. According to Ron Johnsen, president of Iowa Signal and Electric, this procedure has worked great.

"This is simply one piece of equipment we ask ourselves how we ever got along without," he says.



Side view (above) and back view (below) of pothole machine



particularly in tricky areas with a variety of conflicting underground utilities. The contractor, however, should be given the flexibility to choose the right approach for each job.

## Replace hand digging with a pothole machine

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Yes, that's right: a pothole machine.

Before beginning underground work, it's a good idea to locate every conflicting utility line. However, digging test holes by hand is time- and labor intensive.

Some organizations use a pothole machine can be used to locate utility lines. The machine forces a jet stream of water into the ground through a hose, simultaneously sucking the mud into a tank. When the hose reaches the utility line or conduit, the hose is removed and workers mark the utility location with a piece of conduit or a stake in the hole.

## HDPE or PVC?

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High density polyethylene (HDPE) conduit has proven to be an excellent product. Engineers should talk with contractors and vendors to gain a better understanding of this material and allow more flexibility in substituting it for polyvinyl chloride (PVC) conduit, especially when boring in soils that are a menace to glued PVC joints.

## For more information

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## A new resource for trenchless construction

The Iowa Statewide Urban Design and Specifications (SUDAS) program has begun to address trenchless construction in its design manual. Information in the new Chapter 14 can help designers recognize situations where trenchless construction may be preferred and the types of tolerances that should be used. See the "Developmentals" section on [www.iowasudas.org/](http://www.iowasudas.org/).