

TECH TIPS

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TECH TIPS BY NASSCO IS A BI-MONTHLY ARTICLE ON TRENDS, BEST PRACTICES AND INDUSTRY ADVICE FROM NASSCO'S TRENCHLESS TECHNOLOGY MEMBERSHIP PROFESSIONALS.

CROSS BORE PRE-CONSTRUCTION & GPS INSPECTION RECORD KEEPING

By NASSCO Member Jason Walborn, Professional Pipe Services (Pro Pipe)



UNDERSTANDING THE ISSUE

The installation of pipelines and conduits by horizontal directional drilling (HDD) can increase the likelihood of damaging crossing utilities. Directional drilling has substantial performance and economic advantages, but requires cautious steps to locate and protect existing infrastructure. While one-call services and some additional research by someone with utility experience can help avoid most conflicts, the sewer service lateral remains to be the most challenging to address (especially for natural gas providers).

It's a known fact that natural gas cross bores through sewer laterals can blow up houses, and even telecommunications drilling has resulted in home explosions when also crossing gas lines. The sewer lateral, being a gravity drain, is a direct conduit to the house with the ability to allow gases to enter the home. The location of these laterals is often poorly documented considering non-permitted additions and often follow illogical alignments.

There is no indication that sewer service laterals have been compromised (drilled through). They usually do not have tracer wire, are typically constructed of non-locatable material and, more commonly than not, are not documented. Common HDD practice includes identifying the location of crossing utilities and pot holing can provide a physical observation that the existing utility was not damaged. However, inaccurate sewer lateral locates are commonplace.

BEST PRACTICES

The HDD industry has made great improvement with best practices in terms of accounting for these little meandering nightmares. Sewer service inspection companies equipped with 'lateral-launch' technology have not only the ability to inspect and locate the laterals, but since they launch from the mainline, they can also account for every connection in the bore path, which is often missed when judging solely from surface evidence (counting houses or cleanouts). There are always more connections than what the surface may indicate. Best practices tell us to consider lateral launch to locate the laterals before drilling.

Lateral launching is only half the battle. To substantiate the inspection effort, fulfill the inspection in terms of best practice and ultimately protect your process, there needs to be a record keeping element associated with the inspection effort. Proof that best practices were followed, and all potential crossings were not damaged, must be documented to deliver a guarantee that people and property will not be in danger.

UTILIZING GPS

Records often include bore sheets, written field logs, and sometimes maps, which can shed a lot of light in terms of "look before you drill," but one particular record that could offer security is a GPS point capture. GPS enables remarkable information collection with very little effort and cost. Lateral launch technology can include subsurface transmitters that enable surface locating. Visually locating the point of connection (with depths) and changes in alignment with GPS as the lateral crosses the bore path provides excellent intelligence. If the bore path was challenged, this data could support identifying a new bore path (accounting for the tolerance of the depth accuracy).

Furthermore, GPS data associate any given lateral with an address, which improves risk tracking and provides a time stamp which supports the event timeline. GPS is also being utilized beyond the alignment of the lateral in terms of a spatial record, but also to provide a tracking element, such as a GPS point capture at the center of every private property immediately prior to lateral locate points. This ties the subsurface alignment capture with the understood supporting structure which the lateral services. This helps in the QA/QC effort to associate the inspection and location of subsurface laterals with a surface structure in the event there are more connections identified than what may be apparent on the surface (a condition that occurs far more frequently than imagined).

GPS data, with a consistent methodology for alpha-numeric identifiers (and description terms), enables both tracking and searchability in a vast data set (city-wide). For example, perhaps the first point capture is the property with a special numeric sequence. That number is consistently known as the property ID, followed by a subsequent series of lateral alignment shots. Then the description can be used for the work order or address with alignment features, such as bends or branch connections. When locating from lateral launch inspections, the CCTV operator must make a physical effort to locate each point of interest, and add a GPS point from a sub-meter hand-held, resulting in a minimal amount of additional time to the overall effort (well worth the data). Having a GPS depository (routine practice for adding points) improves continually populating this data, which can not only improve searching, but can also substantiate that best practices were followed with all potential laterals accounted. GPS can eliminate errors related to disassociating lateral connections with structures, or addresses. This data also will help with the post-HDD inspection effort, and ultimately contribute to reducing the long-term legacy effort related to cross bores.