

## POINT OF VIEW

## Quality Assurance and the Trenchless Marketplace

by John Jurgens

It's not easy to tell the difference between a quality and poorly installed product in the trenchless industry, given that the work is usually done out of site, bringing to the forefront the old saying "out of sight, out of mind."

Many times the work occurs during a 24- to 36-hour stretch, making ongoing inspection of products and processes difficult. What tells us if we have achieved the quality of the product and the expected efficiency and longevity of the system?

Frequently, there are precursors that provide insight to the durability of a product during construction. Recognizing these indicators during the construction phase requires observation skills not commonly grasped through witnessing one or two projects. Trenchless pipeline rehabilitation involves procedures and fundamental components that are significant for ensuring a successful project.

The majority of the projects that are awarded today are principally based upon low dollar bid. As our marketplace becomes more competitive, successful bidders — those with the lowest bid — are sometimes low for some of the following reasons:

- Competence and efficiency of work crews, equipment and materials;
- An anticipation of bid items where possible changes can be made or corners can be cut;
- Omitted items not accounted for or overlooked while preparing the bid.

Modern concepts of accountability focus on the end result. Was the trenchless work constructed to specifications? Will the pipe provide the intended service life? The Technical Council on Forensic Engineering of ASCE defines failure as "an unacceptable difference between expected and observed performance." Therefore, construction failures not only include catastrophic events, such as a major water main or sewer failure, but also continued sewer overflows, red water complaints, low water pressures, I/I issues and damage to adjacent utilities.

Some of these problems can stem from the smallest of details. Premature

failures may be precipitated by a host of problems, including:

- Inadequate or insufficient construction specification and detail;
- Mistaken selection of a product or process not suited to meet either the current problem or long-term goals of the system owner;
- Inadequate planning and execution of the construction process;
- Lack of inspection;
- Inadequate training of construction workers;
- Poor quality of materials;
- Failure to adhere to construction specifications.

The development of trenchless technology standards, for example, is a result of an earlier phase of trial-and-error. In the last decade, both Canada and the United States have spent large sums of money on trenchless rehabilitation — billions of dollars have been spent in the United States alone. As the demand has escalated, so have certain failures on the sewer systems, resulting in SSOs, road collapses, NPDES violations and flooded basements.

The water distribution system has been spared major failures for a few reasons; the first being that not too many water main rehabilitation projects are being done across North America and that the majority of these projects have been for non-structural lining of cast iron water mains. Failures on the water distribution systems are mainly due to inadequate planning and execution of construction processes. However, a lack of inspection and worker experience is a strong contributing factor to the quality of the end product.

Premature failures on trenchless projects are costly and embarrassing. The lessons learned from these failures have led to better standards, but generally only in the local areas where problems have occurred. Lack of shared failure information is generally due to legal reasons and of fear for the reputation of the parties involved. However, with the dissemination of information that is presented at conferences and workshops, by different organizations, some of these better



standards and experiences are beginning to be put forth.

In the past, lack of scientific knowledge was deemed a main factor contributing to poor construction

results. Today, as political and economic trends increase the financial pressures and burdens on the different agencies, lower levels of success can occur due to the lack of funds for adequate pre-engineering, planning and construction supervision. The above trend, coupled with "publicized" lack of successes, gives the perception that the industry can be careless and, at times, negligent.

Systematic methods of error prevention need to be placed into the specification packages and inspectors need to understand where they are and what they mean. The inspector's opportunity of identifying and responding to issues daily is critical. They need to call attention to matters that can quickly lead to Compounded Injury — when shoddy work becomes harder and more expensive to correct later in the project. No detail is too small to monitor.

Planning is the cornerstone of successful projects. It can be beneficial to have an objective expert third party attend early planning meetings, providing insight to the decision-makers on risk assessment, value engineering and other factors that will save an agency both time and money. Many times poor performance is a result of poor decisions based on little information. We can help avoid these pitfalls by arming clients with a sound understanding of the major issues that can affect performance.

At NASTT, our goal is to help agencies have positive trenchless experiences and minimize the learning experience. If you have experienced a problem or have an issue you would like discussed, we believe we can assist you. Contact NASTT Pipeline Rehabilitation Committee members John Jurgens ([nodig@aol.com](mailto:nodig@aol.com)) and Piero Salvo ([piero@waterrehab.com](mailto:piero@waterrehab.com)).

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