



Inspect Before You Clean

A California city saves big bucks with pipe inspection

By Scott Thayer

Spring weather is on its way. After a long winter, that usually means time for spring cleaning on all fronts, including the sewer system. It is the time that formal bids and request for proposals are prepared in anticipation of upcoming system inspection and cleaning work. The key slogan here should be “inspect before you clean” and not “clean before you inspect.”

Would you budget for and pay a carpet cleaning company to vacuum your entire house if you had only one room of carpet to clean and the rest was tile? Certainly not. Even more certainly, you would not want to pay for cleaning a pipe that may not need to

be cleaned. Now there is a way to get better bids and tremendous savings with new technology—technology that allows you to inspect without the expense of bypass pumping.

By the Numbers

The city of Palo Alto, Calif., knew that it needed to clean its pipes, but first, officials retained RedZone Robotic Services to conduct inspections. The result was a total savings of \$330,000 and a 180 percent return on investment (ROI) on just the RedZone project.

Typical of most municipalities, Palo Alto staff visually inspected manholes for debris depths and specified a cleaning project based on those

estimates. Using this method, the city determined it needed to clean 9,875 In ft of 48- to 72-in. diameter sewer pipe. A number of contractors submitted proposals; the lowest bid received as of August 2006 was about \$955,000.

Before proceeding, Palo Alto retained RedZone to verify sediment location and quantification using its Responder system equipped with sonar. Because Responder is digitally controlled and hydraulically driven, RedZone was able to navigate and inspect while the large-diameter pipes remained in service, eliminating the need for costly bypass pumping.

The results of the precleaning sediment inspection were remarkable.

As suspected by city engineers, a contiguous part of the original scope of work was virtually free of debris. Further investigation also showed that this part of the cleaning project was located in a marsh and had severe access and potential environmental issues.

Of the original 9,875 In ft of original scope, only 5,573 In ft needed cleaning. The scope of work was reduced by 43 percent (4,302 In ft), and the project was put back out to bid. Palo Alto has received bids within budget and recently awarded the project.

An ROI Summary

Initial bidding. The lowest initial cleaning bid came in at just over \$955,00.

Consulting a third party. Palo Alto engaged RedZone to inspect pipe and provide data to publish an improved and more detailed specification.

Follow-up bidding. The city received new bids that included cleaning only the sections that were needed based on the in-service inspection.

Net savings. Palo Alto's return on the inspection investment was nearly \$330,000, or 182 percent, after including the cost of RedZone's work.

Why Inspect?

The key to saving as much money as the city of Palo Alto did is being prepared. In addition to this case, there are five significant reasons why a sewer should be inspected.

First, an inspection helps determine what areas of pipe are suffering from corrosion and how much. Sewer lines can stretch for hundreds of miles, and it can be difficult to determine where a blockage is forming or has occurred.

A second reason is to prioritize areas of sewer cleaning and determine the extent of cleaning required. Perhaps there is not any required, as Palo Alto discovered.

Judging the effectiveness of a sewer cleaning project is a third reason for conducting inspections. Once a crew has gone through and cleaned a pipe, sewer inspection allows workers to determine how much of the sediment was actually removed. This is a valuable resource in deciding whether another cleaning deployment

is necessary to prevent a blockage.

Fourth, inspections can be used as a baseline for comparison over time. The baseline sewer inspection information is significant in that it allows analysis and visualization of future pipe changes.

A fifth and final reasoning behind sewer inspections is that they help ensure rehabilitation is occurring where it should—that it is not being wasted on pipes that are in good shape. [SWS]



Responder robot inspections reduced Palo Alto's scope of sewer work by nearly one half.



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Digging for Pipeline Answers

Over the next 20 years, America's water and wastewater systems will have to invest an additional \$23 billion a year on top of current spending to meet existing national environmental and public health priorities and replace aging and failing infrastructure. The need for renewal of our nation's aging underground infrastructure, in particular, is at an all-time high.

In recent years, design and construction equipment, methods and materials for pipelines and utilities have progressed greatly. The Center for Underground Infrastructure Research and Education (CUIRE), operating from the University of Texas at Arlington (UTA), has played an integral role, promoting research, development and training in underground infrastructure construction and renewal technologies. The center's design and consulting engineers, manufacturers, contractors, analysts, municipalities and government agencies, utility owners, managers, pipeline professionals and researchers focus on finding better ways to manage underground infrastructure systems.

The group strives to enhance overall cost-effectiveness within the industry while improving construction productivity and protecting the environment. CUIRE is involved in a variety of research projects and utilizes findings in its outreach programs (i.e., auger boring, pipe ramming, horizontal directional drilling and pipe bursting schools), workshops (i.e., an inspector training and certification program) and information resources (i.e., the CUIRE-prepared textbook, *Trenchless Technology for Pipeline and Utility Design, Construction and Renewal*).

"The CUIRE is a great complement to the underground industry and to civil engineering at UTA," said Mark Dionise, utility coordination and permits manager for the Michigan DOT and CUIRE chair. "It is a quality group of industry individuals combined with a highly regarded university to specifically address both infrastructure research and education in the underground industry."

For additional information, call 817.272.050 or visit www.cuire.org.

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