



# Trenchless Technology Center *Newsletter*

D E C E M B E R 2 0 1 1

## Web-based Portal For Inspection and Rehabilitation of Sewer Laterals

It has been observed that the majority of older sewer laterals, especially those made of concrete or VCP, are deteriorating rapidly. Wastewater agencies, typically responsible for maintaining the portion of the sewer lateral located in the public right-of-way, and property owners, typically responsible for the portion of the lateral located within the private property, face the dilemma of whether to replace or rehabilitate deteriorated laterals at significant expense. Deferral of needed rehabilitation translates to increase in the wastewater agency annual operation and maintenance budget and increased risk to the property owner. Sewer lateral deterioration leads to pipe collapse and costly sewer backup. Increase in transmission and treatment costs due to inflow and infiltration (I/I) into the public sewer system is inevitably borne by the ratepayer.

In 2005, the TTC completed, in collaboration with Black & Veatch Inc. and Wade and Associates Inc., a major study on the cost-effective rehabilitation of sewer laterals for WERF (02-CTS-5). Continued research activity in this area resulted in the development of a new web portal that provides wastewater agencies and property owners with up to date information on sewer lateral inspection techniques and rehabilitation methods and related important issues.

**Result:** The web portal, at this time hosted at <http://138.47.78.37/werf>, offers brief description of lateral inspection techniques and rehabilitation methods (detailed descriptions can be found in the 2006 WERF report 02-CTS-5). The portal also presents updated information on current companies/products for lateral rehabilitation on the U.S. market, which is stored in the Rehab Methods Database.

A special feature of the web portal is novelty software located in Lateral Rehabilitation's Methods Selection page,

which helps users identify applicable trenchless repair methods for defective laterals in specific site conditions. The software emphasizes simplicity and practicality. Required input data is limited and easy to enter by the user (Figure 1). For given set of input parameters, the program evaluates applicability of rehabilitation methods commonly used in lateral rehabilitation projects and identifies viable rehabilitation options.

The program first evaluates possible entry points for rehabilitation (connection with mainline, property line, nearby the house), and for each suitable entry point checks the methods installation limitations (pipe diameters, repair lengths, offset joints, existing bends). Some methods can be upfront eliminated based on rehabilitation objectives (need for structural repair or pipe upsizing) or based on the portion of lateral that



**Fig.2** Projects in the Case Studies Database

needs the repair (connection to mainline, lower or upper lateral). Some other obstacles can affect the result (the extent of lateral protrusion into the mainline, non-existence of cleanouts, etc.) but instead of eliminating the affected methods measures to address such obstacles prior to rehabilitation are suggested. The performance data of methods are stored in a separate database and are subject to change.

Other features of web portal include a searchable database with 40 case histories that will continue to be updated with new projects (Figure 2), and an electronic discussion forum for sharing knowledge and experiences on this topic. The portal explains in a concise manner issues related to I/I and what affects the effectiveness of lateral rehab in I/I reduction, and the cross-bores issues pointing out the problem and danger of sewer laterals being intersected by another utilities, and outlining methods and techniques to identify legacy cross-bores.

The description of legal and financial issues related to sewer inspection and rehabilitation has been updated compared to what was published in WERF reports (02-CTS-5 and 02-CTS-5d). Three different ways of how agency employees can gain authorization to enter private property for inspection or rehabilitation of sewer laterals are presented (legal authority, expressed and implied consent). Financing of sewer lateral inspection/rehabilitation can be done in three ways (homeowners pay, the agency pays, or they both share the cost) and within these basic approaches a number of funding options exist which differ in

Any 90° bends in the lateral:

No  
 Yes

**HORIZONTAL BENDS**  
ENTER ALL →

Back-to-back 90°  
Mainline

Two 90°s  
Mainline

Back-to-back 90°s  
Mainline

**VERTICAL BENDS**  
DO NOT ENTER THESE!

Cleanout  
PL

Distance x measured:  
- For lower lateral from mainline/manhole  
- For upper lateral from PL.

Location :		x, ft	Type	Radius
<input type="radio"/> Lower	<input checked="" type="radio"/> Upper	30	<input type="radio"/> 90°	<input type="radio"/> 90° BTB
<input type="radio"/> Lower	<input checked="" type="radio"/> Upper	30	<input type="radio"/> 90°	<input type="radio"/> Long <input type="radio"/> Short

**Fig.1** Rehab methods selection software - entering input data (existing bends) is shown

type of financial assistance offered to the homeowners, who is eligible for it and work specifics. Financing issues also include how public funds can be generated for sewer rehabilitation projects and when they may be spent on private laterals. The definition of Private Sewer Lateral is referenced because it typically delineates financial responsibilities for the inspection, repair and maintenance of sewer laterals.

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## References

WERF, 2006. Methods for Cost-Effective Rehabilitation of Private Lateral Sewers, WERF 02-CTS-5, Water Environment Research Foundation, Alexandria, VA, 436p.

WERF, 2011. Legal and Funding Issues During Private Lateral Rehabilitation, WERF 02-CTS-5d, Water Environment Research Foundation, Alexandria, VA, 28p.

## TTC Municipal Forums

Three forums have been scheduled in the fall 2011 as follows: in Littleton, Colo., (Nov. 8); Portland, Ore., (Nov. 15), and Azusa, Calif. (Dec. 13), while the fourth forum is planned in Boston, in early January (date to be announced). The forums are designed as one day programs with low participation cost (\$45 for municipal participants) and all participants can earn CE units for attending (a \$15/certificate fee applies in OR and CA, while there is no additional cost for PDH certificates in CO).

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## TTC Celebrates 20th Anniversary

The TTC celebrated its 20th anniversary during the fall Industry Advisory Board (IAB) meeting held on the Louisiana Tech Campus from Oct. 26-28. This annual meeting brings TTC researchers, faculty, staff, and students together for an intensive two-day event that provides an overview of the ongoing and planned research and other activities undertaken by the Center and allows the IAB to have input into the direction of the Center. Twenty IAB members attended this meeting in person while another four were able to participate through a web-based meeting format that allowed vocal and visual interaction for IAB members not able to attend in person. IAB Chairman Joe Barsoom was unable to attend so the meeting was directed by Vice Chairman Ed Kampbell.

One of the outcomes of the meeting was the establishment of a new technical advisory committee tasked with helping to vet presentations given at the TTC's Municipal Forum series. This committee is headed by Dr. Andy Dettmer of Carollo Engineers, with help from Dr. John Matthews of Battelle Memorial Institute; Richard Wright and Roy Streatfield of Sekisui-SPR; Ed Kampbell of Jason Consultants Group; Lynn Osborn of Insituform (an Aegion Co.); and Richard St. Aubin of IPEX Inc.

The next IAB meeting will be held on Jan. 25, 2012, in conjunction with the Underground Technology International Conference in San Antonio, Texas.



2011 Industry Advisory Board gathers for TTC 20th anniversary.

## Industry Advisory Board

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