



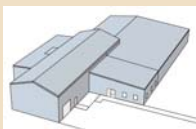
Trenchless Technology Center *Newsletter*

J u n e 2 0 0 5

National Trenchless Technology Research Facility Becomes a Reality

Long a dream of the TTC and its advisory board, the creation of a purpose constructed research facility to support the trenchless industry in North America is nearing reality.

Preliminary designs for the first phase of the facility were prepared earlier this year and the final funding raising to allow the project to proceed has been under way over the past couple of months. The project was given a massive boost by Mike Garver, one of the "fathers" of microtunneling in the United States, last year with a gift of \$250,000 toward the project. Since that time, many others have stepped forward to support the project including Hugh O'Donnell, a Tech alumnus and long-time HDD industry leader with a gift of \$25,000.



The project has been divided into two phases. The first phase will be approximately 5,000 sq ft in floor area and will include a 40-ft x 85-ft x 22-ft high-test facility with overhead crane and a strong reaction floor. This will house our new NSF-funded large-scale soil box (20 ft x 20 ft x 8 ft high) and a general purpose testing area. The rest of the first phase facility will include smaller laboratory areas and a conference/seminar room that will support hands-on education and training seminars on trenchless techniques.

The second phase (to be built as additional funds are available) will house a pipe rehabilitation test facility, specialized research labs, graduate student workspaces and space for industry research collaboration. This facility will be available for collaboration involving research faculty in North America and around the world and for use by industry and industry organizations in the testing and development of advanced

trenchless methods. The building itself is planned as a no-frills building allowing the support to go to critical building features that support the research activities.

An honor roll of companies and individuals that have provided support to the project is shown in the attached table and the funding thermometer shows that the necessary funds for Phase I are close to being received.

The current timetable is for building plans to be completed at the end of the summer and for construction to start in the fall. Once the building is finished in 2006, the soil test chamber will be constructed within the high bay test area. Also in the high bay area, a strong floor area will be constructed for general purpose structural testing. This testing capability is being supported by a \$30,000 contribution from SMI Joist of Hope, Ark.

All gifts of \$1,000 or more will be recognized with an inscribed brick or plaque within the facility giving recognition to the generous sponsors who have made the project possible. Anyone interested in making a contribution, please contact Ray Sterling at the TTC.



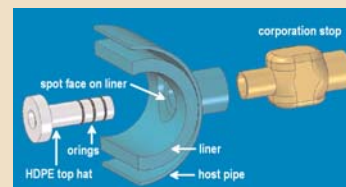
Reconnecting Service Laterals in Water Mains

For the past two years, TTC has been working as a sub-consultant to Boyle Engineering Corp. as part of a project funded by the American Water Works Association Research Foundation (AWWARF), titled "Non-Disruptive Tools for Remaking Connections after Pipe Rehabilitation."

The purpose of the project has been to try to address one of the main stumbling blocks to trenchless rehabilitation of water lines — the current process of excavation at each service to make a pressure-tight connection with the installed liner. The report on this project is expected to be issued by AWWARF later this summer and will contain an examination of the potential for a wide range of trenchless reconnection options. These were collected and analyzed by Dan Ellison of Boyle Engineering, principal investigator for the project, from a literature and patent search, contact with water and gas piping rehabilitation manufacturers and contractors which included a two-day brainstorming workshop held in January 2003. The principal role of the TTC as part of the project was to bench test some of the concepts identified to investigate their feasibility and/or to collect information about application issues for the concepts.

The three main tests undertaken were:

1. To examine the drilling of the liner by inserting a flexible drill bit from the meter pit through the service connection and corporation stop.



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- To attempt to seal the reconnection using an HDPE connector electrofused to the liner and with an o-ring seal to the inside of the corporation stop (see illustration).
- To prototype aspects of an approach whereby the service line and corporation stop are cut free from the existing pipe and pulled back to the meter pit.

With regard to the third alternative, the concept of using an old lateral to help pull in a new one is used widely when excavations are made at the meter box and at the main but this method is only marginally less intrusive than open cut methods since pits are required at both ends of the service lateral. The reconnection technique examined involves robotic release of the corporation stop from inside the main by drilling, pushing a steel cable with an umbrella gripping device down the lateral from the meter and through the corporation stop, and pulling out the existing service and corporation stop while simultaneously pulling in a new HDPE lateral pipe. To demonstrate this concept and to determine the forces needed for the pullback, TTC fabricated and field-tested a pulling frame and an umbrella pull head for the pull back tests and recorded the pullback forces needed in both straight connections and in curved connections.



TTC students led by Mikey Swanbom prepare to conduct a pullback test.

It is anticipated that in an operational version of the technique, a robot would be used to cut free the corporation stop from the existing pipe and to attach the new service connection to the umbrella device before it is pulled back (i.e. the new service connection would be installed from within the newly lined pipe and a seal of the service connection to the liner would be made by electrofusion. More details on the results of the testing and the overall findings of the project will be available in the AWWARF report. TTC faculty involved with the project were: David Hall, Aziz Saber and Ray Sterling.

NASTT Student Chapter Activities

The Louisiana Tech University NASTT Student Chapter has experienced an active academic year full of travel and educational experiences. In fall quarter, the students held their third Trenchless Technology Field Day, which included a demonstration of LMK's T-Liner system for sewer laterals conducted by Jabar Corp., a local trenchless contractor and pipe bursting equipment developer. In January, the student chapter gathered a large group of students and headed for Houston for the Underground Construction Technology (UCT) Conference. The students assisted in a variety of ways at the conference and exhibition and Houston is always a good draw for Louisiana Tech students. In the last activity of the academic year, 14 chapter members were able to attend the 2005 NASTT No Dig Conference in Orlando, Fla. They again assisted at educational sessions, meandered through the exhibit



TTC-IAB Chairman, Joe Barsroom with Ray Sterling and Tech students (from left): Colton Hagggar, Andrew Peffley, Stacey Smith, Alane Boyd and Brad Colquette at the 2005 No Dig Conference.

hall and developed new relationships (with at least one student, Alane Boyd, finding a summer internship with the trenchless consulting firm Bennett and Staheli). Chapter members had the pleasure of bringing two awards home to Tech. One poster won second place in the Student Activities Poster Competition, and another second place in the Trenchless Research Poster Competition. In addition, Lance Tyson received a Rain for Rent scholarship. Chapter members attending the meeting were: Derek Guillot (student chapter president), Andrew Peffley, John Mathews, Brad Colquette, Colton Hagggar, Shawn Zhou, Lance Tyson, Titus Davis, Stacey Smith, Zhe Li, Mikey Swanbom, Andy Dettmer, Alane Boyd and Arun Jaganathan.

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June 2005

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