



Keyhole Technology
Collaboration
Project



A newsletter for Keyhole Technology Research Collaboration Project participants and manufacturers

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Inside this issue:

<i>Valve Box Installation</i>	1
<i>Core Measurement Tool</i>	2
<i>Permagard Encapsulation</i>	3
<i>Trenton Corrosion Protection</i>	3
<i>Nicor Coring Truck</i>	4
<i>PECO Keyhole Implementation</i>	4

Test Station/Valve Box Installation Through a Keyhole

The question has been asked – How do I install a valve box or test station in a cored keyhole? No problem for Washington Gas. Not only is Washington Gas installing cathodic test station and valve boxes, but they are even raising and replacing existing boxes through the means of keyholing.

In 2003 Washington Gas (WG), serving customers in Washington D.C., Virginia, and Maryland, implemented a keyhole program in order to reduce road restoration costs. However, the question quickly arose; how do you install an access box in a cored pavement?

The keyhole team at WG started to study the issue at hand. They began experimenting with various ideas including pre-casting access boxes in concrete. But as one can imagine, these pre-cast 18-inch diameter concrete cores containing access boxes were very heavy and awkward. What they decided to do instead was to minimize the size of the core (12 inches)

and grout the access box in place directly (disposing of the 12-inch core). After some practice the keyhole team perfected this concept. "It isn't rocket science, and simpler is always better when you are working on busy streets," says Buddy Secor, of Washington Gas. "Simply adding aggregate to the bonding agent and grouting the cast iron access boxes in place is working well and has passed the acceptance test from the jurisdictions. The crews have become very proficient at the process, providing an excellent work product."

WG even took the process one step further; raising and replacing existing valve and test station boxes. WG found by coring around the existing box in question (without a pilot bit), they could remove and replace with the same high standard of quality as seen with the new installations.

Not only is the process saving Washington Gas money but it is also gaining great praise from both the city officials and residents.

Highlights from our next issue:

- **Installing Perfection tees in a keyhole**
- **Cold weather grout issues**
- **New Timberline squeeze-off tool**



Install test station level with pavement and backfill around box with 3-4 inches of pea gravel.



Grout is poured up to surface of existing pavement.



Replace test station cover.



Finished product

Core Measurement Tool (CMT) Collecting Data on Cored Pavement

Developed by GTI's keyhole project team, the core measurement tool (CMT) is assisting utilities' keyhole programs. As more and more utilities utilize pavement coring machines a need has risen to monitor and measure the performance of the replaced cores. This information will be of value to utilities trying to receive approval from their local jurisdictions for coring pavement.

The CMT represents a low-cost, durable, and reliable means of profiling the replaced core. It is particularly useful as a tool to be used after the core has been replaced and then again at some period in the future. The CMT is placed over the core and a depth gauge is used to take three measurements through the holes in the legs (one on each leg of the unit - see photo). The data can then be compared to show the superior performance of these replaced cores.

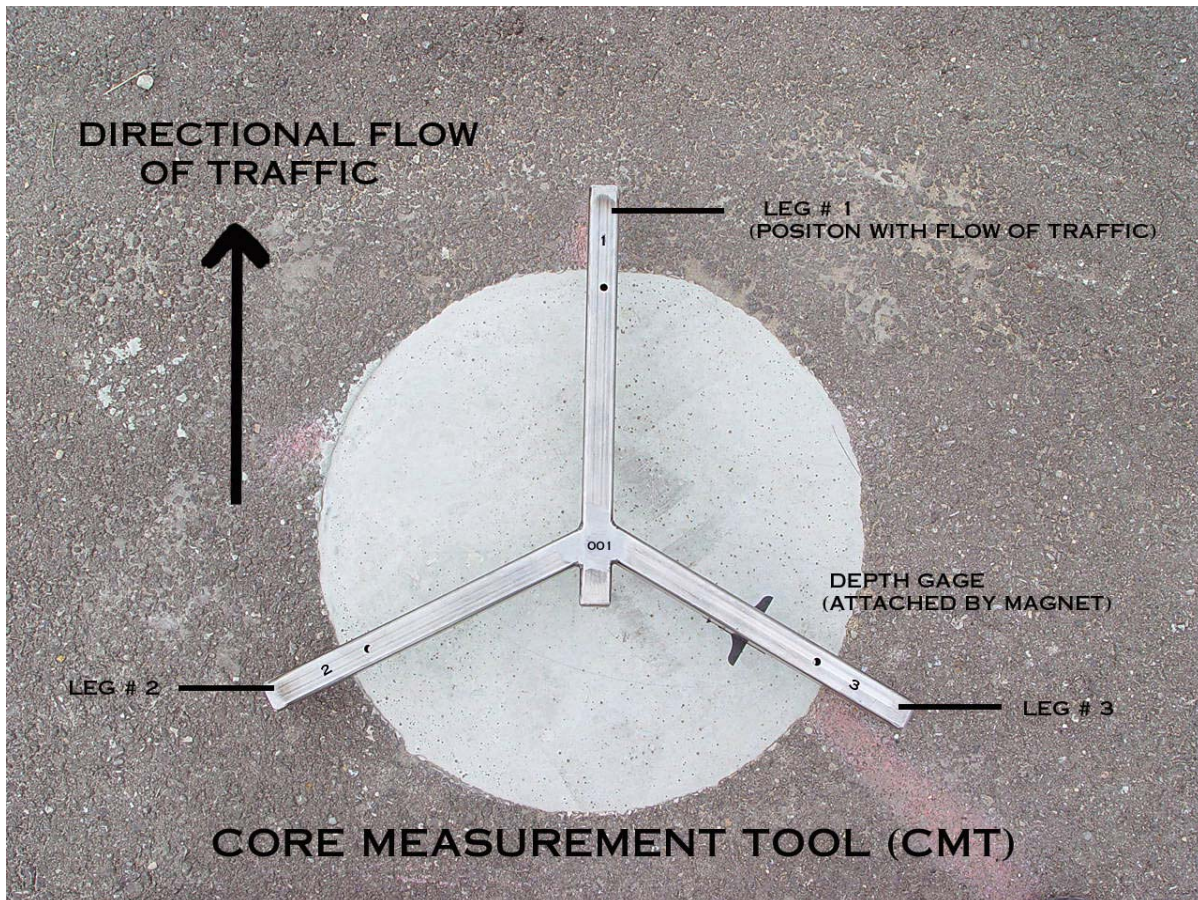
Coring of the pavement for keyhole purposes has been occurring for about a decade. Unfortunately, detailed records of these past cores have not been kept. The use of the CMT by utilities using the cor-



Core Measurement Tool in carrying case

ing machines will allow for data to be collected regarding core performance over time. Showing that the core does not sag will be beneficial to assist in proving the success of this type of pavement restoration practice. Such information collected from this tool will greatly increase the acceptance of coring throughout the country.

For more information or to obtain a CMT please contact Dennis Jarnecke or Angie Wood at GTI.



PERMABOND® Encapsulation Repair System

Permabond LLC, along with Omega Tools, has developed a repair system for encapsulation of cast iron joints. The tooling process was designed by Omega Tools, and makes use of their long-armed keyhole tools. Along with the tools, the repair system consists of an encapsulation bag and New Poly-Urethane sealant from Permabond.

Literature from Permabond states that: "Permabond's new two component self – leveling high performance polyurethane

sealant is a MDI based material that does not contain hazardous TDI or coal tar resins, or volatile components/100% solids. No primer is needed.

The encapsulation kits are available in 4", 6", 8", 10" and 12" LP bell joints and mechanical fittings. The encapsulation bag is made of Dupont Cordura nylon and is rated at 90 denier strength. This strong fabric bag contains C clamps inside the bag. Complete dry and wet encapsulation kits are available."



Keyhole installation of Permabond repair system

New Method to Re-coat Pipe After Cadwelding

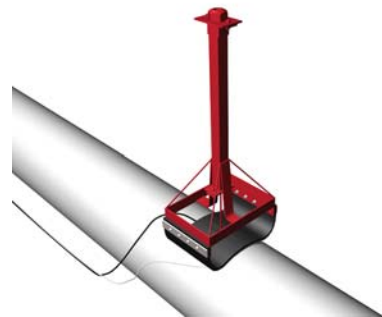
Corrosion work through a small opening has been performed for many years. Special tools have been developed that enable workers to perform the necessary work from the street surface. However, applying anti-corrosion systems to the finished work down in the keyhole is still an area in need of improvement.

For one solution, GTI's keyhole project team has been working with Trenton Corporation of Ann Arbor, Michigan to help develop an improved anti-corrosion system for keyhole excavations. Trenton already had an effective, grease-like corrosion protection material called Temcoat 3000 that would protect the cadweld site, but the problem was determining how to apply Temcoat 3000 to a pipe through a small hole.

One solution that was developed is to first apply the Temcoat to the bottom of a plastic pad and

then use a special tool to apply the pad. This not only protects against corrosion, but also protects against backfill. Backfilling can begin immediately, because Temcoat 3000 requires no curing. Pads have been manufactured in 4-inch, 6-inch and 9-inch squares. "Developing technologies for applying anti-corrosion systems in a 10-foot deep, 18-inch diameter hole has required extensive teamwork with customers and GTI," says Frank Rampton, sales manager of Trenton Corporation.

GTI and Trenton are now working with select utilities to evaluate the effectiveness and durability of the cadweld pad system. Other anti-corrosion systems for keyhole excavations are also being developed under the coordination of GTI. "GTI has been extremely helpful in providing not only their own expertise but also in helping us connect with the appropriate people in several utilities," says Rampton.



Application of plastic pad with Temcoat 3000 to pipe surface.



Finished product — pipe surface is protected against corrosion.

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Contact List Updates

Nicor Gas, serving Northern Illinois (except Chicago), has joined the Keyhole RC Project. The contact person at Nicor is: Dave Shipley
(630) 983-8676 x. 2878
email: dshiple@nicor.com

If someone in your organization would like to obtain a copy of the keyhole newsletter, please contact Jim Otzko at 847-768-0523 or send an email to james.otzko@gastechnology.org

Have a question? Register for the Q&A Board on the Keyhole website !

Q&A: Please register for the new [Question and Answer Board](http://www.gtiservices.org) on the keyhole website at www.gtiservices.org. Participants can post questions on keyhole related issues and read about issues other utilities face.



Nicor Gas To Use Vermeer CS418 Core Saw

Left: Keith Griffen and Bob Jones of Nicor Gas have headed up efforts to mount a Vermeer CS418 coring saw on a Nicor truck. Bob Jones states, "The Vermeer unit is compact and easier to position on congested side streets." Nicor hopes to get the truck on the streets in the near future. We will keep everyone up to date on their success.



PECO Energy and Keyhole

a two person crew to always have the equipment needed on site", says Mark Andraka of PECO Energy.

Working with GTI, PECO's program is focusing on activities to reduce their operations and maintenance costs, including: cast iron joint repair, service cut-offs, and eventually service installations. "Our goal is to make keyhole a mainstream practice in our company" says Andraka. One area of focus is a review of precise location techniques. The team will use a variety of techniques, including micro excavation, pipe locating, GPR, and leak location.

PECO Energy, an Exelon Company in Philadelphia, PA has recently implemented keyhole technology into their current processes with assistance from GTI and SerVac.

Taking a slightly different approach than other utilities, PECO utilizes a combination coring and vacuum truck to perform their small-hole activities. PECO combined a SerVac vacuum unit on the same chassis as a Simco core drilling unit. "This allows

PECO recently started introducing service cut-offs in their program. Next, they will be investigating the affects of grouting the core in cold temperatures.