

Keyholing Technology Paves the Way for Underground Utility Repairs

By Marshall Pollock

While the business press concentrated at the upper echelons on National Grid's plan to buy Keyspan Corp., making it the third largest energy delivery utility in the U.S., with nearly 8 million customers there and almost 20 million worldwide, at the other end of the pipe, the New York based gas distribution operations of these two companies were independently engaged in implementing a unique construction and maintenance process at ground level, designed to better serve their respective customers and reduce traffic disruption caused by utility repairs.

The process is keyhole coring and reinstatement.

In New York City, Keyspan Energy Systems got the go-ahead in March from the NYC DOT for an extensive keyhole coring and reinstatement program employing state-of-the-art Utilicor Technologies' coring equipment and its permanent pavement-reinstatement, bonding compound, *Utilibond™*.

According to Gerry Lundquist and George Mirtsopoulos of Keyspan Field Operations, who have taken the lead in introducing and rolling out the program: "Our crews have been using the Minicor skid-steer coring attachment and Utilibond on a pilot basis for more than a year now, and have achieved impressive results. We have seen increased customer satisfaction. No more jack-hammers, no debris left behind to dispose of and no waiting for paving restoration. At the end of the day the only thing left to mark our presence is a small circle in the pavement that is almost invisible."

The reaction to the process from the New York City DOT was equally enthusiastic. "This is a great process," said one of the officials. "There's no jack-hammering to disrupt the neighbors or damage the roadbed or the rest of the

pavement and it is much quieter than other excavation methods. It also cuts down the time on the road. That means less inconvenience to the public, which, to a government agency accountable to the public, is very important. I also like the smaller, circular hole and the fact that the fast-setting Utilibond allows you to reopen the road to traffic within 30 minutes of the repair. It's not hard to approve a system like this."

National Grid operations in up-state



Keyholing technology helps to facilitate SUE work.

New York got similar reactions to the process when they demonstrated the process to city and county engineers and other officials in their Syracuse and Albany divisions. "Coring a hole through pavement, doing the repair and being able to reinstate the core back into the pavement and open the road again to traffic, within half an hour of the repair, virtually blew them away", said Don Cordone, Senior Gas Operations Specialist at National Grid, and the one in charge of the program there. "The neighbors like it too. No more noisy pavement breaking machines, lengthy road closures and bothersome traffic disruption. This process allows us to get in to do our work and get off the site quickly and, when we're done, we leave the road in much better condition than

we would have with conventional repair methods."

It's the same story all across North America, as utilities and their contractors, adopt a process that is not only simpler and safer for their repair crews but results in less disruption to the public and returns the roadway to its pre-excavation condition, without repaving, thereby saving thousands of tax dollars for local ratepayers. "It's truly a win-win, situation for all concerned", says Cordone.

The process, which involves the coring of an 18-inch diameter hole through all kinds of asphalt, asphalt-concrete and reinforced concrete road systems and sidewalks, to enable crews to vacuum excavate and view subsurface activity, or repair underground plant from the road surface using long handled tools, was developed by Enbridge Gas Distribution of Toronto in the early 1990's and has been in use there for more than 15 years.

How Keyholing Works

After the underground repair has been completed, the hole is backfilled to the level of the base of the pavement and the core or "coupon" that was originally cut from the pavement, is reinserted back into the road surface where it is permanently bonded by a special proprietary adhesive called *Utilibond™*, that creates a bond stronger than the original pavement, and is able to support a single axle weight of more than 50,000 pounds—five times the H-25 AASHTO standard.

Rotary coring facilitates utility access to underground plant and is a key cost saving element in the growing utility maintenance trend to "keyhole" technology, which allows crews to cost-effectively perform repair or maintenance work on underground pipe or other buried plant from the road surface



NYC DOT workers with a 13-in. asphalt core on a Keyspan site.

without resort to more costly, disruptive and inherently more dangerous, excavation methods. It also has direct application to other utility service and trenchless operations including: test holes, service drops and shallow splice pits for the telecom-munications and cable industry, daylighting and test holes and bore-gel blow-out holes for directional drilling and inspection holes for pipeline integrity and SUE. Based on actual experience, rotary coring and reinstatement can literally pay for itself within six to eight weeks from paving budgets and cost savings on road cut fees.

According to testing conducted by Golder Associates, the international engineering firm that has monitored the process for more than ten years through repetitive freeze-thaw cycles on high-traffic roadways, the pavement core is bonded back into the roadway in such a manner that post-excavation traffic loads are transmitted to the remaining intact slab in accordance with original pavement design specifications. Based on this proven track record, in addition to road authorities in New York and Canada, the Utilicor pavement coring and restoration technique has been approved as a permanent pavement repair by DOT's and local authorities in a number of jurisdictions in Michigan, Illinois, Maryland, Virginia, District of Columbia, Pennsylvania, Massachusetts, New Hampshire, Connecticut, Texas, Alabama, Georgia, Arizona, Nevada, Utah and Oregon.



Once the core is reinstated, the road can be re-opened in about 30 minutes.

source of positive community relations. It also allows municipalities to redirect scarce repaving budgets from small hole utility repair sites to pothole repair and major resurfacing requirements. It is a reliable, field-proven process with ZERO reported failures in more than 15 years and over 25,000 successful corings and reinstatements in tough urban climates.

Easy and simple to operate, the coring unit is user-friendly and physically less demanding than other pavement cutting methods. It eliminates the need for jack-hammers, hand-digging and backhoes. It lets the crew work smarter and safer and reduces potential for workplace injury. The reinstatement process is also simpler. Easy opening, pre-measured plastic pails means no more awkward measuring and mixing from fragile paper bags. Just add water to the line on the pail, stir and pour the Utilibond into the hole.

Faster, one-step permanent pavement repair means reduced traffic disruption with fewer and shorter road closings. The road can be open for traffic just 30 minutes after the repair. The less intrusive, more precise pavement coring and reinstatement process

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