

UNDERCOVER



Simon Gordon-Walker presents Phil Luxton with the WRC Certificate.

Perco Approved for EcoCIPP™

Perco Engineering Services were recently confirmed as the first WRC Approved™ contractor for the installation of the EcoCIPP™ pipe relining system in the UK.

WRC director, Simon Gordon-Walker (left), presented the WRC Approved™ certificate (No. PT2340904, www.wrcapproved.com) to Phil Luxton, manager of Perco's CIPP division, on the Perco stand at Pipelines 2004 in September.

EcoCIPP is an eco-friendly cured-in-place pipe relining system, developed and manufactured in Germany, by Brandenburger. The process puts a seamless GRP lining inside the existing pipe and cures it in situ, using an ultra-violet light system.

Because of its fast UV curing method, Perco's system uses a fraction of the energy consumed by conventional CIPP and avoids the styrene emissions caused when conventional felt liners are cured using hot water.

For more details, visit Perco.co.uk and request the new EcoCIPP brochure.



CULVERT RENEWED AS TRAINS RUN ON

TRAINS ON THE OXFORD-WORCESTER LINE KEPT RUNNING IN SAFETY, AS PERCO RENEWED AN UNDER-TRACK, BRICK LINED CULVERT BY ROD PULLING, IN JULY.

The six-week renewal project, to burst and reline the culvert near Yarnton with 600mm MDPE pipe, involved three days work for Perco. The burst was done in just two hours by a Perco team working under contract to Alfred McAlpine, within the Great Western Earthworks and Structures Partnering Arrangement (GWESPA).

Careful planning and control of the 225-tonne rod puller ensured that the burst constantly adhered to a 10mm tolerance in relation to heave, settlement, twist and cant, while working under less than 4m of cover.

Whilst as a contingency, a gang was on hand to hand-pack the track to correct rail height, it was never needed, as the heave at track level was just 3mm.

Project Director Phil Bowcock commented: "Like many hundreds of similar structures within the GWESPA project, this culvert on the OWW had been under close monitoring. The renewal method used by Perco has extended its life indefinitely, without having to stop the train services at any stage."

CHECK THE NEW WEBSITE!

We now have a totally new website at www.perco.co.uk

Reflecting a change of corporate image, the site offers a range of new features plus improved navigation.

Expandit exported

In Japan...

Iseki, the major Japanese tunnelling specialists, have teamed up with Perco to manufacture and distribute Expandit pipebursting technology in Japan and South East Asia.

Last year, Iseki shipped a number of concrete pipes to the UK for bursting. These were taken to a test site, where they were installed in back-filled trenches to simulate normal pipe bursting conditions. Perco used Expandit to make short work of the 250mm diameter pipes, in original condition and with steel reinforcement. Following bursting, 250mm and

300mm clay drainage pipe was inserted to complete the typical process. "For the time being, the Expandit equipment for Asia will be produced here", explains Nick Sheehan, "But Iseki have manufacturing rights in Japan under the contract. We anticipate the contract will be worth in the region of £10 million over the next decade."

...and Korea

Perco has also signed a partnering agreement with the Clean Water Company, part of Daewoo, to make feasibility studies of potential pipebursting applications in Korea.

Initially, Perco will supply Expandit bursters for trials. Our experienced engineers will provide on-site advice and support, when required. The seeds of the agreement were sown in June 2003, when Nick gave a presentation on pipebursting to engineers and officials at an environmental technology conference in Seoul. This was followed by a UK visit from a Korean delegation and a live Expandit demonstration. Like Japan, Korea has ageing concrete sewer systems and is new to this method of pipe renewal. More than 10,000km of sewers are earmarked for rehabilitation.



Major roadworks NOT ahead

Biocentre connected by Perco

Perco's BM400 guided auger boring rig made a highly cost effective, trenchless sewer connection to the new National Biomanufacturing Centre (NBC) at Speke, Merseyside, in July.

Working from a concrete shaft, Perco engineers performed a 30m drive to an existing brick manhole, below an access road on Speke's Estuary Commerce Park. The one-week project saved the high cost of open-cut excavation and reinstatement across a highway and the construction site.

Murraywood Construction's site manager, Kieran Loughrey said: "We were very impressed by the Perco system. It is the way forward and we have done many similar projects in the past that would have benefited from this technology. I have no doubt we will use them again."



Gary Houghton signs with the Iseki delegation



Nick Sheehan and Heung-sik Park, President of the Clean Water Company

BURSTING WITH NEW IDEAS

A range of state-of-the-art pipebursting methods means that clients can always get the best solution for the job. Gary Houghton outlines Perco's choice of firepower against decayed drains.



An Expandit hydraulic bursting head

Pipe replacement now involves making real choices in terms of economics, speed and minimised disruption and a good, specialist contractor can always call on more than one technique when assessing a project.

It's an area where size matters. A key factor in pipebursting is the degree of upsizing, from the existing pipe to the new pipe diameter. Many forms of pipe replacement use continuously welded pipe strings and where any required upsizing ratio is small, the hydraulic rod puller is ideally suited. It will install new pipes quickly and economically, in

lengths up to 200m and diameters of 100mm to 750mm. A pit is required at each end of the burst, one for launching, and one for reception.

Perco has also introduced compact rod-pulling pipe bursters that can operate from within existing manholes, providing a quick, no-dig solution to pipe replacement problems. The rod pulling equipment can be quickly assembled in an existing manhole. In combination with Snapit™ pipe, traditional rods accomplish the pipe replacement, between manholes, without any pit excavation necessary.

Another no-dig option, Miniburst, handles smaller pipe diameters (3", 4" or 6") and can be launched from existing manholes. Typical applications are for pipes running under houses, roads, fencing and walls. This system is versatile, bursting existing pipes in a wide range of materials. The system is quiet, discreet and most importantly, is compact & portable, so that pipes can be replaced from within confined areas, such as gardens, narrow alleys and some basements. We also have unique hydraulic pipebursting systems that are

capable of large-scale upsizing, with minimal ground disturbance. Expandit installs pipe of a much larger diameter than the existing pipe. As the system is designed to work from existing manholes or small excavations, it replaces damaged pipe with little environmental impact. Its hydraulic operation allows it to burst through a range of pipe materials, such as clayware, pitch fibre, concrete, asbestos cement, cast iron and uPVC. Unlike pneumatic systems it is quiet, reduces vibration and cuts ground heave.



Perco's manhole rodpulling gear

HOW GREEN IS YOUR SCHEME?

No-dig is better for the environment, right? Nick Sheehan answers the question and argues for even greener trenchless techniques.

Trenchless technology has earned the reputation for minimising disruption due to engineering works, particularly in pipeline installation and renewal. Often the environment benefits because the landscape is left intact, there is less noise and exhaust emissions from queuing traffic are avoided.

Environmental cost

However, some trenchless techniques carry their own environmental cost - even to the extent of releasing chemical pollutants, or impacting on landfill sites. Others are still used when much less disruptive alternatives exist. For instance, why excavate launch and recovery pits for pipebursting if we can operate manhole-to-manhole and still save cost? The point is that no-dig working is a premium service, which can add cost, compared to open cut, but it is justified by the benefits for infrastructure, transport and

the environment. So why settle for old techniques that compromise these benefits?

Like most industries, this one has its share of contractors who skimp on environmental care just to undercut the competition. There is also a natural reluctance to specify new techniques in favour of tried-and-tested ones. In contrast, progressive trenchless operators recognise that the way ahead lies in developing methods and equipment with the least possible impact on the environment. They are introducing advances such as biodegradable drilling muds, on-site recycling plant, compact gear for manhole launching and environmentally responsible turnkey services.

Sewer relining

The latest development in trenchless sewer renewal, which allows a liner to be installed without the usual pollution problem, is an example. Pollution occurs with conventional cured in place felt liners when they are



Installing an EcoCIPP liner

heated, to activate curing, by flushing with hot water. This causes styrene, a volatile, potential carcinogen, to wash out of the liner into the water, which is then lost to drain.

Our new system, EcoCIPP avoids the pollution drawback by using ultra-violet light, instead of hot water, to activate curing. It also uses a fraction of the energy consumed by conventional CIPP, as water heating is not required.



Phil Luxton (left) explains about EcoCIPP

Phil takes charge of EcoCIPP™

We are pleased to announce that Phil Luxton recently joined us. Phil takes on the position of EcoCIPP Manager, responsible for EcoCIPP relining projects.

Phil has worked with civils contractors since gaining his engineering qualifications and, on arriving at Perco, wasted no time putting his experience to use: "EcoCIPP adds the final piece to complete our set of trenchless techniques. I have now put together a team and a relining system that will be hard to beat."



Pipe and towing head ready for installation

Newt-friendly Flood Project

One of Perco's trenchless pipe installation techniques was used to avoid disrupting a site of special scientific interest, in May, as part of Severn Trent Water's extensive flood alleviation measures in Kenilworth, Warwickshire.

Perco were called in by North Midland Construction PLC to burst an existing 9-inch sewer and install 120m of 450mm MDPE pipe. The job was completed on time and budget, using a 225t rod puller.

Stuart Proud, Operations Manager for the North Midland civil engineering division explains:

"As sections of the sewer ran under trees and a wall, Perco's choice of non-percussive bursting was critical. The SSSI is close to Kenilworth Castle and the work area was given a precautionary survey by English Heritage archaeologists, before work started. With a river adjacent there was also a potential risk to the local newt habitat and this was minimised by erecting a newt barrier, 12 weeks in advance."

Directional Drilling

4-Star, 4-Pipe Crossing

Perco's directional drilling team racked up another success in September, with a series of four road crossings at Hemel Hempstead.

The contractor, Fabricon Ltd, suggested horizontal directional drilling in order to complete a 40m section of a fire hydrant system, which it is installing for a BPA fuel depot. This offered the fastest way to install the lines without open cut works across the road.

Steve Watts explains the difficulties involved:

"Ground conditions always have a bearing on how difficult, or easy, a drilling job is going to be. When the cutting head crosses a soil interface, close control is essential to keep it on track and in this case we had to negotiate layers of sand, gravel and flint soils. We also had to drill underneath a gas main and four fuel lines.

"The drilling team achieved pin-point accuracy, on schedule, using the DD6 rig with the latest available tracking device."

Perco's drilling mud recycling system reduced the quantity of mud

transported to and from site and used mud was tankered to a licenced disposal site by Carcarc Ltd.

Perco installed HDPE pipes, running 40m in parallel, with a 1m separation. These pipes were comprised of a 250mm drain, two 315mm fire mains and a 180mm spare, ready for connection to the rest of Fabricon's replacement and upgrading works.



Perco's new BM500 being lowered into a shaft

New BM500 for larger pipes

Another auger boring rig has been added to the Perco equipment fleet. The Bohrtec BM 500 is 150t machine, offering a powerful and accurate solution for installing 400mm to 1000mm OD product pipes. It can operate from rectangular shafts of 3.2m x 2.0m, or circular shafts of 3.2m diameter. Guidance is by theodolite, equipped with a CCD camera, allowing accurate control over a maximum drive length of 60m.

TACKLING THE HARD STUFF

For the drinks industry, with some bottling plants filling around 600 bottles per minute, any unscheduled downtime is 'bad news'. So when Diageo, a global company with brands such as Johnnie Walker, Smirnoff and Guinness, planned renovation work to drains underneath one of its Scottish bottling sites any impact on production was unacceptable.



Clayware drains in position

Cue Perco, using three separate renewal methods to overcome problems found with the existing concrete drainage pipes.

The drain ran between three manholes, of which two were located under bottling line conveyors and the third, easily accessed in a car park.

Planning to slipline the whole 32m of 300mm drain with 250mm MDPE pipe, we found the first 16m, between the two internal manholes, problem-free. Unfortunately, sliplining the second section failed, due to a suspected void.

At this point Perco prepared to excavate and construct a timber heading to the second manhole. To avoid disrupting the bottling plant, our works started from the car park, requiring removal of the tarmac, biscuit, cover and frame, plus the inside wall of the manhole chamber.

The suspected void was found 10m into the drive and Perco engineers redesigned the timber heading construction to make it safe. With the heading complete, we installed 300mm clayware pipe, backfilling with hardfoam, before reinstating the external manhole.



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