

UNDERCOVER



LEADING ON GREEN ISSUES



Rail on the Road

Perco's Rail Roadshow made a recent stop at the Strategic Rail Authority, where a large audience of Network Rail engineers were given a presentation on Under Track Crossings (UTX) by auger boring and directional drilling.

The advantages of auger boring in UTX work are immense, particularly when trackside space is limited. Perco's technique avoids the need for track possession and allows trains to continue running without a temporary speed restriction. It also eliminates long term trackbed settlement.

Nick Sheehan comments: "The Roadshow was a follow-up to our exhibition at Infrarail 2003. Instead of inviting the Rail Industry to come to us, we decided to take the show to them. We really have got the techniques and experience to revolutionise this aspect of rail engineering but it is still a new area for much of the network."

Perco was the first contractor in the UK to install UTXs under high speed lines, without speed restrictions, using optically-guided auger boring.

AT PERCO WE FIRMLY BELIEVE IN ENGINEERING TECHNOLOGY THAT DELIVERS REAL ADVANTAGES FOR OUR CUSTOMERS. WE ARE ALSO FULLY AWARE THAT TAKING THE ENGINEERING LEAD INCREASINGLY MEANS DEVELOPING OPERATING METHODS, PLANT AND EQUIPMENT, WITH THE LEAST POSSIBLE IMPACT ON THE ENVIRONMENT.

As we avoid the space requirements and disruption caused by open cut methods, the benefits are often measured by fewer traffic hold-ups, less pollution and less disturbance on the surface. Volumes of waste to landfill and the demand for newly quarried materials are significantly reduced.

This issue of 'Undercover' focuses on EcoCIPP, our newest technology, which we believe will transform the reputation of resin impregnated felt pipe relining in the UK by eliminating styrene emissions and using less energy in a faster process. We are also in the final stages of trialling biodegradable drilling muds. This is another step towards zero waste, which we already pioneer in the UK by the use of mud recycling during directional drilling operations and by ensuring responsible disposal.

Environmental Protection is one aspect of our turnkey services, which can involve every part of a project, from design and feasibility studies to waste removal and from making good to traffic management...



ITS HERE! EcoCIPP™ Perco launches environment-friendly sewer rehab system

We are pleased to announce that we have added a new trenchless solution to the Perco stable - Cured in Place Pipe (CIPP) relining.

FULL STORY ON CENTRE PAGES!



Big Pipe Ducks the Traffic

One of the largest pipelines to use directional drilling in the UK has been installed under Lancashire's busy A585 by Perco. As traffic continued unaffected, the 710mm diameter water pipe was pulled into place following a drilling operation that impressed even the drilling rig's manufacturer, American Augers.

Our directional drilling division was brought in by Alfred McAlpine Infrastructure Services, under MWH's AMP3 pipeline project for United Utilities. The road crossing was required as part of the Franklaw WTW distribution scheme, in the Blackpool area, including supply pipelines from Thistleton-Weeton and Broughton boreholes.

In a drill of 100m, in soft ground conditions, Perco progressed from a 400mm ream up to 1000mm, opening the bore by four inches at each step before towing the 710mm PE pipe through.

Steve Watts, Perco's drilling operations director, comments: "This drill, exceeding 1m ream over 100m, put the drilling rig and mud recycler through its paces. American Augers were impressed by the combined performance of the DD6 and our team."

Alfred McAlpine project manager, Cameron Watson, adds:

"This part of the scheme showed the feasibility of horizontal directional drilling for large-scale water pipelines. Perco's professional approach got the job done, so we were able to complete the section to schedule."



Carltons Flood Alleviation, Nottingham

ALL IN A DAY'S WORK

TURNKEY CONTRACT

CLIENT: South West Water

CONTRACT: College Woods conservation area

LOCATION: Penryn, Cornwall

DETAILS: 220m of 225mm pipebursting in 5 sections by rod pulling

The foul sewer was running within 5m of a river, which had to be crossed by the construction of a temporary bridge (the only means of access to the area). Room was only available for access by a 5t machine. Lines were over-pumped. We used our 40t manhole burster, which can be broken into man-handleable pieces to access tight areas. Our works were completed in four weeks, which included the construction of a children's play area.

TURNKEY CONTRACT

CLIENT: CL Warren

CONTRACT: Carriageway crossing

LOCATION: A580 East Lancs. Rd, Haydock, Merseyside

DETAILS: 70m of 225mm & 75m of 300mm Denlock installed by BM400 auger boring

Perco was contracted to install both foul and storm water sewers for a new housing development. The 225mm pipe ran parallel with the A580 and the 300mm pipe crossed the road. Due to the length of the crossing and the pipe diameter we employed a pumping system to inject polymers around the pipes to reduce skin friction on the pipe. Both shots were launched from existing manholes and received into reception pits. The works were completed in two very wet weeks.

TURNKEY CONTRACT

CLIENT: North Midland Construction plc

CONTRACT: Carltons Flood Alleviation

LOCATION: Nottingham

DETAILS: 7.5m diameter by 9m shaft construction

Our task was the construction of a 7.5m diameter wet well to a depth of 9m using Charcon shaft sections. The shaft was jacked down, due to very wet ground conditions, which required constant pumping. A 450mm gravity sewer, running into the well, is currently being installed by Perco, using guided augerbore methods. The overall scheme is designed to reduce flooding in the Carltons area.



College Woods, Penryn, Cornwall



Carriageway Crossing, A580, Haydock, Merseyside

CLEANER, FASTER SEWER RELINING PERCO LAUNCHES EcoCIPP™



Cured-in-place pipe (CIPP) relining accounts for tens of thousands of kilometres of sewer rehabilitation worldwide. As a trenchless technique, that adds up to a lot of avoided traffic problems, excavation and resurfacing work. One of the fastest relining methods available, our own system has all the established benefits of CIPP but virtually eradicates the environmental drawbacks linked with it.



Why EcoCIPP™?

Perco EcoCIPP is simply our name for a process that has been developed over more than ten years by Brandenburger of Landau, Germany. Over 140km were installed in Germany in 2000 and the technology has so far been adopted in five other countries.

Our long experience in trenchless rehabilitation allowed us to evaluate various CIPP techniques and select the system that we know will deliver the best results in UK pipe relining. The Brandenburger system uses ultra violet light curing to overcome the problem of styrene emissions, which is now a widely known environmental hindrance to conventional CIPP methods.

Sewer renovation can be achieved in a relatively short time using EcoCIPP, as a result of the straightforward preparatory work and extremely short UV curing times required. The material we insert in the old pipe is a composite of glass fibres, impregnated with light-curing resin, either polyester for domestic sewage pipes, or vinyl ester for aggressive industrial sewage pipes.

The Process

Provided the sewer is not badly distorted, we can deploy an EcoCIPP liner straight into the sewer pipe, after cleaning, thorough inspection and removal of any obstructions, such as projecting service lines, or grown-in tree roots. The liner is winched through the pipe between manholes and then closed at both ends using a special sealing system. At this stage the liner is very flexible. It is inflated with compressed air, which presses the liner against the bore of the existing pipe to produce a tight fit.

The final step is to draw the system's UV curing lamp/camera unit along the length of the liner, hardening the resin and forming a high-strength pipe-in-pipe. An internal foil covering is removed and the new pipe is immediately ready for holes to be remotely cut through the liner wall where lateral connections occur.

Complete rehabilitation of pipes can be achieved at a rate approaching 20m per hour.

Lasting Strength

One of the additional benefits of the system is the superior strength of the liners, due to their very high glass fibre content and seamless construction. At a given wall thickness, the carrying capacity of the liner is 100% higher than that of a typical, laminated felt liner, allowing for thinner wall sections.

Low Energy

EcoCIPP has many benefits to recommend it but there is a further bonus, which is often left out of engineering calculations. This is its low energy consumption. As the UV light activates the curing stage and the material creates its own heat, the process demands very little power in comparison with a system requiring hot water.

CIPP BENEFITS

In summary, EcoCIPP offers the following key benefits:

- Seamless liner is more reliable than conventional systems
- Consistent installation process reduces possible failures
- No hazardous waste to dispose of
- Reduced noise pollution
- Half the installation time of conventional systems
- No need for overnight curing
- Reduced noise and disruption

DIRECTIONAL DRILLING IN SUSSEX

Perco have drilled three 450mm diameter crossings for a 10km pipeline within Southern Water's Slindon to Hardham bulk water transfer scheme. The pipe was installed by JT Mackley Construction for Costain/Black & Veatch Joint Venture.

At each crossing, Perco avoided the disposal of large slurry volumes by mixing and recycling the drilling mud on site, in our own recycling plant, instead of using conventional once-through, premixed mud.

The longest drill, of 152m, was made underneath a culvert. A second, 50m crossing was drilled in very soft ground conditions, to install the 450mm HDPE pipe under a stream. Perco also completed a 100m road crossing under the A29, at Bury Hill. The work was part of the bulk supply

scheme between Portsmouth Water's Littleheath reservoir and Southern Water's Hardham works in West Sussex.

Mackley's Installation project manager, Vic Gretton explains that environmental issues mattered: "We needed a directional drilling company with a professional approach to drilling and the recycling plant was an excellent advantage because there was no excess slurry. Based on this experience I would not hesitate to use Perco again."



DRIVING UNDER A ROUNDABOUT

Both directional drilling and general civils work were called for when Daniel Services awarded Perco a contract at Prescott, Merseyside.

Our engineers had to install a 180m by 225mm pipeline through sandy clay ground conditions for the completion of a new rising main. The main had to be driven under the A57 carriageway and a roundabout to make a connection with an existing manhole. Directional drilling proved to be the ideal solution for the job, finishing off the rising main installation while road users above were oblivious. The civils aspect of the project involved Perco in constructing 100m of 300mm pipe to provide an outfall from a sewage treatment works.



Doing the Business

Difficult ground conditions and tight access proved no problem for a Perco auger boring team in Manchester, in April, when they successfully connected Taylor Woodrow's prestigious Christie Fields Business Park development to the city sewer network.

Centum Construction Services, under contract to Hovington Ltd, called on Perco to make the final 25m gravity connection to an existing manhole, without any excavation and disruption to heavy traffic on the A5103, an arterial route linking the airport with the city centre. This presented the BM400 auger with a testing half-face of sand and clay soils, through which the bore was cut using



laser guidance and 324mm steel sleeve inserted to receive the new pipe.

Very restricted working space at the manhole made it expedient to leave the steel in place after the team installed the 225mm MDPE connection, in threaded, 1.5m pipe lengths. The whole job was completed in less than three days.

In Print

Perco has launched more new literature with details of specialist turnkey services:

- Directional Drilling Brochure
- Rail Technology Brochure
- EcoCIPP Brochure

To get your copies, call Emma on **01604 590200** or email info@perco.co.uk



'SOUPER' JOB

Baxters Food Group operates its production facilities to extremely high standards of hygiene control. So when drainage maintenance work was recently required at the group's Grimsby site, the clean, non-intrusive approach that Perco suggested was the right solution for Baxters.

Aware that some pipe renovation or renewal could be required below ground, Perco's engineers planned to tunnel beneath the factory from an access shaft outside. Taking this route ensured that there was no possibility of contamination or disruption to the 24-hour production plant. Detailed planning satisfied Baxters that the work would not compromise site safety and hygiene codes and on that basis the contract was awarded to Perco.

The access shaft and 22m-long heading were completed using a typical timber construction to BS 6164. With excavations accomplished, the condition of an existing PVC main drainage pipe was checked and it was decided that it should be replaced. Perco installed 200mm ductile iron pipe to correct line and levels. All lateral pipes and rodding eyes were reconnected into the new ductile iron main before the heading was finally backfilled with Bactel 30 Hardfoam.

In addition to the work on the 200mm main, Perco also introduced cured-in-place pipe (CIPP) liner in other drainage lines as part of precautionary works.

Mr Chris Reeve, Engineering Manager at the Grimsby site, adds: "Even the simplest maintenance is handled with special care at our food production sites. Maintaining drainage systems presents a particular challenge, which is why we called in specialist help from Perco."



Perco Engineering Services Ltd
Cornhill Close, Lodge Farm Industrial Estate
Northampton NN5 7UB U.K.

Tel: +44 (0)1604 590200 Fax: +44 (0)1604 590201
Email: info@perco.co.uk Web: www.perco.co.uk

