

# UNDERCOVER

## WJ DRILLING JOINS PERCO

PERCO'S ACQUISITION OF WJ DRILLING MARKS A MAJOR EXPANSION OF THE COMPANY'S DIRECTIONAL DRILLING OPERATIONS. WJ DRILLING IS A WELL KNOWN PLAYER IN THE DIRECTIONAL DRILLING MARKET AND BRINGS A WEALTH OF EXPERTISE TO THE PERCO TEAM.

Following on from last autumn's expansion of its pipe jacking and tunnelling operations, directional drilling is the latest part of Perco's trenchless technology portfolio to be expanded.

Perco director, Nick Sheehan, commented to Undercover, 'whilst we have had a presence in directional drilling for many years, it hasn't been a core offering. The acquisition of WJ Drilling gives the company a huge amount of expertise in directional drilling and it allows us to compete for and take on major directional drilling projects in a way that we couldn't in the past.'

The new directional drilling team will be headed up by Wayne Cartwright.

Directional drilling operations will be focused on:

- Dirty and clean water services
- Power and communications cabling
- Under track crossings
- Crossings under roads, airport runways and waterways

Since being acquired by Onsite Central, part of South Staffordshire Plc, in 2007 we have expanded the range of trenchless technology services offered and the size of projects undertaken. The expansion of our directional drilling service is part of this programme.

For more information about directional drilling visit [www.perco.co.uk](http://www.perco.co.uk).



### Swagelining® upgrades pumping main on Rugby's new Western Relief Road

When a 250 metre section of a 600mm ID pumping main on the route of the new Rugby Western Bypass needed to be rehabilitated, a close fit liner was



One of the access pits, showing the proximity of other services to the pumping main.

chosen by Severn Trent's consulting engineers, Pick Everard. Swagelining was selected as traditional sliplining wasn't suitable due to deformations in the host pipe.

Open cut had been ruled out because of the proximity of other services including gas and electricity mains, fibre optic communications cables and a foul gravity sewer.

Perco installed the new liner in two sections which were then jointed with pupped flanges. The completed pipe was then pressure tested. The whole project was completed in a three week window, with the pulling stages taking around four hours per section.



Directional drilling operations underway at Prescott, Merseyside

**See us at No-Dig Live  
5-7 October, 2010.**

**Stand 202 Stoneleigh  
Park, near Coventry**

## Cambrian Line UTX installed by guided auger boring

Back in May, our auger boring team took a BM400 rig to Commins Bach, near Machynlleth, Powys on the Cambrian Railway to install an under track crossing for Carillion Rail. The UTX work was undertaken from two, two metre diameter launch and reception pits which were installed in routine line possessions. The augering work was carried out in a three day window to install a 225mm ID lost steel pipe in a 12 metre shot. The works were carried out without any



Guided auger boring works are carried out with a BM400 rig

disruption to rail operations. The newly installed pipe was then sliplined by the main contractor.

Guided auger boring was chosen for the UTX installation because of its supreme accuracy, the fact that rail operations can continue unaffected and its ability to achieve settlement of +/- 3mm at track level, which negates long term settlement.



Welding sections of lost steel casing during augering

## MAJOR CULVERT ON THE WEST COAST MAIN LINE RELINED WITH ECOCI PP AT GRAYRIGG, CUMBRIA



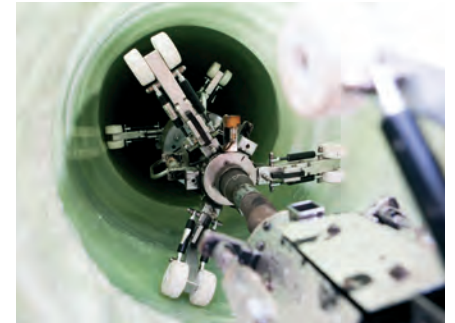
A culvert carrying a beck under the west coast main line at Grayrigg in Cumbria had been replaced with three no. 600mm ID steel pipes. To minimise the effects of erosion from stone bearing storm flows, we lined the pipes with EcoCIPP UV cured in place liners. EcoCIPP was chosen for its excellent wear resistant characteristics, ease of installation and excellent environmental properties. EcoCIPP's UV curing characteristics made it the ideal solution due to restricted access on the east side of the railway track.

All curing operations could be operated from the launch site on the west side of the track.

The works were carried out whilst train operations carried on unaffected. The work was carried out in a five day window using the access pits for the pipe installation. Installation equipment was positioned in the reception pit during a routine line possession.



EcoCIPP liners in place in each pipe. One finished, one awaiting trimming and the third being prepared for inflation



The UV light train in the newly cured second pipe.

## EcoCIPP strengthens highway drainage in major M1 widening scheme near Nottingham



Monitoring progress of the EcoCIPP UV curing process

In Spring 2010, we were called in by the MVM Joint Venture, the main contractor working on the widening of the M1 from three to four lanes close to Junction 26, near Nottingham. The scheme had been designed to convert the excess space in the central reservation into an extra lane for each carriageway.

As part of the widening works, drainage under the carriageway and slip roads,

in fields parallel to the carriageway and beneath the motorway bridges had to be tested, and where necessary upgraded too.

As part of the project we air tested all of the cross carriageway drainage. All of the drains that failed the air test were to be rehabilitated to bring them up to standard.

Following analysis of the test reports and CCTV footage it was decided that 20 sections of pipe totalling 400 metres needed to be relined. The EcoCIPP UV cured in place liner was chosen as it gives additional structural strength to the pipes as well as improving flow. The affected pipes ranged in diameter from 225mm ID to 900mm ID.

An additional six sections of pipe only needed localised patch repair. The EPROS patch liner system was chosen for this task.

The works were carried out in two phases, each of three weeks, with much of the

work being done at night to minimise traffic disruption.

Most of the affected pipes ran from the central reservation to the hard shoulders and traffic management was used during night operations to enable the works to be carried out.



Resin is applied to a section of EPROS patch liner

# FISHY BUSINESS IN THE SCOTTISH HIGHLANDS

EVERY ONCE IN A WHILE AN UNUSUAL PROJECT COMES OUR WAY AND THIS ONE IS A GOOD EXAMPLE. A RESERVOIR, A SALMON HATCHERY AND SPRING IN THE NORTH WEST HIGHLANDS GAVE US A SET OF CHALLENGES THAT DON'T OFTEN APPEAR IN THE SAME JOB. HERE'S THE STORY...



The reservoir at Coire Nan Arra, near Kishorn, Wester Ross, Scotland

Lighthouse Caledonia, one of Europe's leading producers of farmed salmon, wanted to safeguard water supplies to its salmon hatchery at Loch Carron on the Applecross peninsula in North West Scotland by enlarging their reservoir.

Lower rainfall in recent years meant that reserves of fresh water, essential for rearing salmon smolts, have become lower and the company appointed main contractor Aecom to expand capacity at Loch Coire Nan Arra, their reservoir in the hills to the north west of Loch Carron. Water from the reservoir is drawn off and carried to the hatchery via Russel Burn to provide a constant supply of fresh water.



Looking up Russel Burn towards the new dam. The raised penstock of the outlet pipe is to the right of the track.

Aecom constructed a new dam wall to increase capacity of the reservoir by around 30%. The existing reservoir outlet pipes were still usable but there were concerns about the integrity of the lower outlet pipe. The lower pipe, at a depth of around 4.5 metres below ground was found to be leaking due to failure of some of the pipe joints.

The critical point was that the leakage was compromising the foundations of the dam wall and was causing concern as seepage underneath the dam was increasing above expected levels. A 126 metre section of the lower outlet pipe needed to be repaired.

The big engineering challenge was that flow from the reservoir to the hatchery had to be maintained to ensure that the salmon weren't affected. This meant that draindown of the reservoir wasn't an option. Any work to the affected pipe could only be done from the outlet penstock.

A number of options for repairing the pipe were considered, including mechanical seals and various forms of sliplining. Hot water cured CIPP lining was ruled out because of the pollution risk, UV cured CIPP was ruled also out because access was needed at both ends of the pipe, which wasn't possible. A coffer dam in the reservoir was considered but ruled out.



The new pipe is pushed into the host pipe. One of the three grouting tubes can be seen on the top of the new pipe.

Following talks between Aecom and our engineers, 'push' sliplining, rather than the conventional 'pull' sliplining, was identified as the most practical solution.

However, there was one major problem. How could we seal the annulus between the host pipe with a 750mm ID and the new sliplined pipe of 630mm OD?

Anything to be used had to be pushed 126 metres along the sliplined pipe and then positioned over the joint remotely.

Tests were carried out in Perco's yard to establish feasibility of the method and



The butt-fused pipe is prepared for pushing

integrity of the patch seal over the annulus, and once the seal had been proven, Aecom gave us the go ahead to start work on site.

630mm OD SDR 17.5 PE pipe was transported to site in sections and butt fused into a 126 metre long, continuous pipe. Spiders were used to position grouting tubes at 30, 60 and 90 metres along the pipe to allow grout to be pumped into the annulus between the host pipe and the new pipe after installation.

After being pushed into the host pipe, the EPROS patch liner was pushed into position over the stepped joint and inflated against both pipes. This was a complex procedure due to the length of the pipe, the flows of very cold mountain water through the pipe and the fact that the patch liner is an ambient cure product, designed to cure at low temperatures. The patch liner was successfully positioned and then the annulus was grouted up using the previously installed grouting tubes.

The project was carried out over a six week period with the main activity being undertaken in June.



The newly installed pipe showing the grouting tubes, pushing rod and air line for the patch liner

# PATCH LINING IN BLACKPOOL



The patch liner and packer are lowered into the manhole

As part of major sewer upgrade and flood prevention works in Blackpool, Perco was asked by United Utilities' contractor Birse Coastal to carry out localised renovation works on gravity storm water outfalls below Blackpool's central promenade.



Preparing the epoxy resin for pouring on to the EPROS mat

The affected 450mm ID pipes were connections from a 600mm ID square culvert and there were concerns about the integrity of some of the joints in a section of each pipe.

Following CCTV inspection, EPROS patch lining was recommended and adopted as the preferred working method. Whilst excavation and external



Resin is applied to a section of EPROS patch liner

repair was an option, this was ruled out as it could have affected the foundations of the pipes. Being an internal repair and a trenchless solution, there was no need to disturb the pipes' foundations or risk damaging other parts of the pipeline.

The works were carried out during a two day window without disruption to flows in the pipe.

One of the key reasons for the client choosing EPROS Patch Lining was the 50 year guarantee that comes with each EPROS installation carried out by Perco.



The patch liner is wrapped around an inflatable packer

## Our team, Grange Park Rangers FC Under tens take the summer tournament season by storm

Our football team, Grange Park Rangers Under tens, who play in the 'A' League of the Northampton & District Youth Alliance League, have had a fantastic summer.

Over the summer holidays they played in four local tournaments and reached the final in each one. They also achieved a convincing victory in one of the finals. Well done lads!

We wish them every success for the new season and we'll bring you regular updates.



## Deena receives her certificates for NVQ & OCR from mono-ski racer Anna Turney.



Deena receives her certificates from Anna Turney

Back in June, Deena Johnson, our administration assistant, completed three modules of her course in Business Administration and IT. The course is run by Northampton based training company Starting Off.

Deena gained a NVQ Level 3 Advanced Apprenticeship in Business and Administration and OCR Certificates in IT and Text Production for Business Professionals, in which she gained a distinction.

The Awards Evening was held in June at Northampton's Guildhall and the awards were presented by Anna Turney. Anna was paralysed from the waist down in a snowboarding accident in Japan in 2006. Four years later she finished sixth in the Slalom at the Vancouver Paralympics. Anna is a well known motivational speaker, showing others how they can triumph over adversity and achieve their personal goals.

## Emmaus Oxford

Emmaus is an international charity working with homeless people and those at risk of being homeless. Emmaus provides a community where they can live, learn and work to build a self-sustaining community.

We were asked if we could help Emmaus as they were setting up a new therapy room at their Oxford centre. We talked to our colleagues at South Staffordshire Plc, Perco's parent company, and they agreed to make a donation for the new therapy room.



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