

GROUND *breaker*

Issue 4: 09/2011

Our 4th issue of **Groundbreaker** comes during an extremely busy time for us. In the last 6 months we have undergone our greatest developments since our initial year of UK operations in 2008.

Despite numerous challenges we successfully completed the Tottenham Court Road Station diaphragm wall in April. Further highly complex piling works continue there through the summer (see *Plunged Columns* on page 2).

Email me directly on: michael.jones@bauertech.co.uk

We have been awarded 2 of the 5 Crossrail advance work packages namely Whitechapel Station and Liverpool St. Station projects. This represents a cementing of our position at the forefront of the London major civils market after the successes at Tottenham Court Road. This extra workload also sees a dramatic strengthening of our resources at all levels.

We have successfully attracted some of the highest calibre staff available in the UK market

as well as bringing in the very best machines (see page 3) to deal with the heavy duty requirements of London.

We are currently reinforcing our systems and structure to ensure that we remain able to closely manage every aspect of our operations to maintain the highest quality standards whether that be on site, during tenders, or elsewhere.

Michael Jones
Managing Director

BAUER Technologies

Inside:

PAGE 1:

Further High Calibre Staff:
In Readiness for New projects

PAGE 2:

Diaphragm Walling & Plunged Columns at:
Tottenham Court Road Station.

PAGE 3:

Setting the Standard:
For BAUER Technologies.

Latest State-of-the-Art Equipment:
For BAUER Technologies.

PAGE 4:

Pride in Plant Award Winner:
Gavril Zoita

A Happy New Arrival:
Julia Christine

Further High Calibre Staff

IN READINESS FOR NEW PROJECTS

As a continuation of our development we have made great progress in increasing our site staff whilst continuing to hire only the highest calibre personnel in our industry.

It is difficult to increase the team quickly when your standards are as high as ours but we have recently managed a 100% success rate in securing our personnel targets.

Recent additions include **Alex Cartwright** at the end of 2010, the highly experienced and renowned Diaphragm Wall and Plunged Column specialist who immediately stepped into the role of Projects Director, responsible for controlling our site teams within the M25. **Ross Moore** brings his experience as a Project Manager on some of London's most complex projects to take over our recently won Whitechapel Station (Crossrail) project.

Neil Grace joins as Construction Manager to create the vital link between project

managers and operational staff. Neil is amongst the most respected of his peers after performing key roles on previous projects, which recently include the Shard and Heathrow T5. Further additions include **Jim Rath, Delwynne Ranner, Peter**

Hollings, Duncan Robertson, Alistair Macdonald, Jack Davies and Ciara Dineen.

All new staff have been selected on the basis of their previous experience which will strengthen and support our drive for excellence.



Pictured from left to right - Alex Cartwright, Neil Grace and Ross Moore

DIAPHRAGM WALLING AND PLUNGED COLUMNS AT Tottenham Court Road Station Upgrade

By **Yvonne Ainsworth** Operations Manager, BAUER Technologies and **Alex Cartwright** Project Director (BAUER Keller JV)

After installation of the OSD piles and secant walls, the BAUER Keller JV at TCR faced a new challenge of constructing a 44m deep diaphragm wall box and 11nr plunged columns. The box will form a four storey basement for future escalators and lifts. The plunged columns will enable the top down construction of the box.

Work on the diaphragm wall commenced in November 2010 and was completed in March earlier this year. Work on the plunge columns ran from June to July.

The 1m thick diaphragm wall was generally built in single bite panels of 3.2m length (apart from corners) in order to reduce ground movements in the surrounding area. Our new Liebherr HS875 was the base machine for a hydraulic grab equipped with a rotator to ensure optimal performance on a limited access site and to optimize the achievable verticality tolerance. Each panel was excavated using the grab to its final depth under bentonite.

After installation of pre-cast stop ends over the entire depth of the panel, heavily reinforced cages had to be installed. The reinforcement cages consisted mainly of 50mm bars as closely spaced as possible without restricting the concrete flow, often in double layers, which meant that the cages had to be connected on site using a combination of splices and couplers to build up a cage of the entire length of 44m. This kind of cage requires an incredible fixing accuracy to ensure that the part cages can be connected again on site. In order to guarantee this, the skeleton of the cages are made in the steel yard in one piece, before being taken apart for transport. Positional couplers for slab connections were also installed within the cage making it very complex to assemble in the steel yard and then to accurately install on site.

Due to limited space being available on site all cage deliveries had to be accurately scheduled for a 'just in time'



Plunged Column Frame

delivery, just before they were required on site.

Due to engineering complexity the team regularly had to work late into the night. Working in a residential area we had to implement tight controls to minimise noise, in close liaison with the local authorities.

Following the successful completion of the diaphragm wall and the demobilization of all associated gear, BAUER's brand new BG40 was mobilized to site to install the 11nr plunged columns into large diameter 48.5m deep piles, which would facilitate the top down construction of the box, which in turn will reduce ground movements and noise emissions during the follow on construction works.

The plunged columns that had to be installed at Tottenham Court Road are by far the heaviest and longest that this industry has seen for a while. A mixture of 600 x 600 and 700 x 700 columns up to 33m long had to be installed. The columns are being delivered in two sections (12.6m and up to 20.4m) due to transport restrictions. The columns have been fabricated by the only steel contractor who stood out as one of the few

who was able to commit to manufacturing these columns to a 1 in 1000 fabrication tolerance.

The size and weight of the individual column in combination with a permissible verticality tolerance of only 1 in 400 (which is inclusive of the 1 in 1000 fabrication tolerance), 10mm positional tolerance at ground level and 5mm level tolerance make the installation of these columns incredibly challenging.



Plunged Column

In order to comply with the specification and install all the columns within the permissible tolerances, a new bespoke plunged column frame was designed and engineered. This frame is 23m long, equipped with laser guides and for the first time in UK history, bears on 'naked' soil rather than a steel casing, clamping the frame in place.

The piles were constructed in a traditional rotary bored manner, a pile cage installed and then concreted. The concrete was designed to maintain its workability for an extended period to ensure that the column could be plunged easily. Obviously, once the pile is concreted, the clock starts ticking. Without the commitment of everyone involved, the installation of the plunge column

would not be possible as many preparatory steps have to be undertaken before the column is installed in its design position: removal of bentonite, lifting of the plunge column frame from the 'rathole' (an empty bore), installation of the frame in the pile, 'manoeuvring' the frame into the correct position and securing it there, lifting the already assembled column from another 'rathole', cleaning the column and finally plunging the column 7m into the pile.

Without the construction of two 'ratholes', the installation of the columns would not have been possible due to the limited space available on site and the time frame, in which the concrete stays workable, i.e. plungeable.

From the now completed plunged column works, data collected confirms that all columns were installed well within the permissible tolerances, which turns this new frame into a confidence inspiring piece of engineering, meticulously planned for the job in hand, turning the plunging of columns into a controlled activity, reliably achieving outstandingly good tolerances.



Follower Piece

"BK have performed very well on the TCRSU Project to safely deliver the quality required on such a complex project. They worked in a collaborative manner and were active in resolving problems to ensure delivery on schedule using high quality equipment. We are pleased that they were a contributor to 1 million man-hours without a RIDDOR lost time accident"

Les Hamilton
LU TCRSU Project Manager

Setting the Standard

DEALING WITH BEHAVIOURAL SAFETY

Rapid emergence as a major player in the UK deep foundations market brings with it many challenges, few more so than achieving an industry leading performance on Health and Safety.



Tottenham Court Road Health and Safety team - The entire site staff!

As we entered the intense and challenging world of Central London's most complex environment, it became apparent that despite good Health and Safety statistics and well thought out procedures, further attention was still

required in the areas of good housekeeping and a move away from Health and Safety policing by site management to Health and Safety responsibility from all members of the team.

Behavioural Safety was found to be the key challenge in moving

from a 'good HSE system' to a *Health and Safety attitude* with results that are unmatched in our industry.

We worked closely with site staff to understand why agreed procedures were not always being followed. Issues were discussed by teams in 'blame-free open forums' in the morning briefings. All site staff contributed ideas and suggestions to improve processes and address recurrent themes. Numerous actions were taken forward, such as making good housekeeping the easiest option rather than the awkward option. The positive response from site staff showed that their feedback was being heard and action taken.

Successes from this initiative were immediate and have seen ready adoption of the highest standards by our teams. We will continue to persevere with these efforts as they address the exact issues

causing concern to our business as identified by our staff, who after all understand our company and our business better than anyone else. We have formalised these Health and Safety initiatives under the heading of '**Setting the Standard**' as we believe that is exactly what we have done and will continue to do.

We are extremely proud of the Behavioural Safety improvements and site staff deserve great credit for the responsibility they have shown to produce a tidy site free from hazards. They have become so engaged that all levels of staff are pro-actively suggesting how Health and Safety can be better improved on a daily basis. They are proud of their involvement in ensuring the quality of their working environment and we are proud of them and thank them sincerely for their co-operation and efforts.

New State-of-the-Art Equipment

FOR BAUER TECHNOLOGIES

BAUER Technologies' insistence on utilising the best and most appropriate equipment to perform the work is further emphasised and strengthened by the arrival of their brand new BAUER BG40 piling rig which arrived in the UK on 26th April 2011 to support the recent addition of their hydraulic grab unit on a powerful Liebherr 875 base machine and their fleet of BG28 rigs.



Hydraulic Grab on Liebherr 875 Base Machine

The BG40 is Bauer's most powerful widely available rig. It has the ability to dig piles to a depth of up to 80m and 3.0m diameter. It has an operating weight of 140t and a torque of 390kNm.



BG40 Piling Rig

The BG40 is ideally suited to drill cased rotary piles and has the ability of powering its own oscillator, which can increase the torque up to 2,790kNm. It also has the ability to install cased CFA piles up to 1.180mm diameter. One very useful feature of the new rig is that it can install piles at a rake of 15°.

'What I love about working for BAUER Technologies is that we never need to make do with second best' says enthused Operations Manager Yvonne Ainsworth, *'We tell our MD what we need, sort out the specification and then wait for it to arrive!'*

PRIDE IN PLANT AWARD Tottenham Court Road

GAVRIL ZOITA

Gavril Zoita was awarded BAUER Technologies annual Pride in Plant Award for 2010 whereby a member of staff is rewarded for taking pride in the piece of plant or equipment they use and maintain during a project. This is not limited to large pieces of equipment such as a BG28, but includes all plant, equipment and tools.

Rather than choose the successful candidate on the basis of a fixed formula, we take the following into account before deciding who is the worthy recipient of the award:

- How the individual looks after their plant/tools/equipment ensuring they are kept clean, well maintained and tidied away on completion of a job
- Is the plant/equipment safe to use and used safely?

- Someone who creates an excellent example to others working on site
- The manner in which the member of staff interacts and works within the team
- Someone who is prepared to go that extra mile

The Award forms part of BAUER Technologies continuous improvement programme to reward their employees for going 'the extra mile'. In doing this it also helps to promote a



Pictured above from left to right:

Michael Jones Managing Director, **Matt King** Site Manager, **Gavril Zoita** Welder & Winner of the Pride in Plant Award for 2010, **Jim Finbow** Health & Safety Manager

positive site culture where team members at the front line are encouraged to highlight areas for possible improvement and present those ideas to the site management team for discussion and possible implementation.

Many congratulations to Gavril for this well deserved award. He has shown a dedicated approach to his duties and to adapting to the difficulties of the Central London environment.



Many congratulations to our Operations Manager, Yvonne Ainsworth and her husband Neil on the birth of their baby daughter 'Julia Christine' born in February.

Yvonne and Julia are pictured here on a recent visit to Head Office where Julia was extremely well behaved for

CONGRATULATIONS!

Mum when meeting the BAUER team. She also seemed quite happy to be pictured sporting a 'Junior BAUER Hard Hat.... could this be an early sign that she will one day follow in the footsteps of Mum!! Yvonne returned to work in June.



BAUER Technologies Ltd
Millers Three, Southmill Road, Bishops Stortford, CM23 3DH,
United Kingdom.

Tel: +44 (0)1279 653108 Fax: +44 (0)1279 653481

email: info@bauertech.co.uk Website: www.bauertech.co.uk