



Cathodic currents drive engineers nuts!

The continuing drive to make Britain even greener created a very different type of problem at Immingham, prompting the organisation behind one of the country's biggest construction and civil engineering projects to look to HBPW for a unique 'bridge' solution.

Associated British Ports (ABP) is leading the multi-million-pounds development of the Immingham Renewable Fuels Terminal (IRFT), the world's largest biomass handling facility.

However, the length of trains required to service the facility meant that a creative solution was needed to ensure traffic flow at the unmanned level crossing in the nearby Marsh Lane area,

could continue unimpeded. The crossing falls within the marshalling yard created as part of the IRFT development.

HBPW Managing Partner, Paul Withers, said: "Some of these trains can be exceptionally long which can cause problems for vehicular and pedestrian traffic if they are stationary too long, so it was decided to build an over-bridge." HBPW worked with Graham Construction to design and build the new structure.

"We developed a structurally continuous steel and concrete composite bridge with very high containment parapets over the



Burning The Midnight Oil

railway, however, our design also had to meet the additional challenges of underground gas caverns, built to house natural gas, as well as the presence of Cathodic Protection Currents (CPC) in the ground.

"On the one hand we did not want to locate piles that might penetrate the gas caverns any more than we wanted sacrificial anodes jeopardising our structures.

"CPCs are a technique used by oil refineries to stop pipes from corroding. Cathodic Protection Currents – a type of electric charge – are transmitted through pipes and also feature sacrificial anodes which, over time, dissolve, leaving the pipes intact. However, we had to be mindful of the corrosive effects of the CPCs and how they might adversely affect our structures.

Client: Associated British Ports
Contractor: Graham Construction



The over bridge taking shape

Partner call for more female engineers

As the national drive to get more women into engineering continues, HBPW Partner, Helen Haynes, says rhetoric has to be followed through at ground level if the industry imbalance is to be positively addressed.

Helen, who is heavily involved in the firm's recruitment strategy, says female applicants are still few and far between.

Ironically her comments follow



thousands of female engineers took to social media to dispel the myth that all engineers are men.



a recent Twitter comment that went viral after

"Of HBPW's 15 engineers, there are only two women – me and a graduate female engineer. Even then much of my time is spent on the company management side of the business," added Helen, a qualified geoenvironmental engineer. "However, in fairness, HBPW rarely gets applications from females which is unfortunate because I, for one, would like to see more women engineers on the team."

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of women in the technical echelons of our business. Equality and diversity remain two of the key watchwords in the non-discrimination policies operated by our practice, and we are proud of the wide range of nationalities on the team including Egyptians, Greeks and Estonians.

If you are an aspiring woman in engineering or part of another under represented class of engineer, please talk to us. The sky really is the limit for motivated and committed candidates from any walk of life. We are also mindful of the current government drive for apprenticeships and have recruited youngsters to work with us both in the longer term and as part of short term work experience placements, to introduce them to the exciting world of work and, in particular, civil engineering.

Unfortunately all of the candidates are men but we are working on the problem! We are now well on the way to the end of 2015 when we will issue our 30th newsletter reporting, no doubt, on more challenging and high profile projects that we are working on. For now enjoy this latest edition of our newsletter and keep an eye on the blog (www.hbpw.co.uk).

PAUL WITHERS
MANAGING PARTNER
HBPW LLP

Welcome



Paul Withers - Managing Partner

This newsletter edition includes information on not just one but three awards which HBPW has received and, indeed, one of them has been nominated for national recognition. Even greater credit is due to the HBPW team because all of the award winning projects have significant technical content, which required not only consideration of the permanent works design, but also considerable thought as to how the end results would be achieved alongside associated temporary works. In short we design to make jobs buildable and always go that extra mile.

Meanwhile, the paucity of women in engineering has recently been highlighted in the technical press and although we only have two women engineers, including Helen Haynes who is one of our practice partners, we are keen to increase the representation

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Head For Heights? Perhaps Not!

Client: Network Rail
Contractor: AMCO Rail Ltd



The new Hardwick Road bridge in Place

Lorry drivers blissfully unaware of the 'height' of their vehicles have unwittingly played their part in one of HBPW's more recent assignments.

'Bridge Bashes' as they are euphemistically known among rail engineering professionals, are when high sided vehicles – taller than the bridge they are passing beneath – collide with the structure, invariably causing both rail and road chaos.

However, where there are enough unintentional impacts – and at Hardwick Road in Pontefract, West Yorkshire the toll is 61 collisions since 1990 – then the structures in question start to be compromised.

"In addition to the problems and delays caused by the numerous collisions, the bridge was also of a construction that caused other problems

for Network Rail, with hidden critical elements," said Partner, Jon Livesey.

The decision was taken, therefore, to replace the bridge's superstructure, including its deck which carried two ballasted rail tracks over the A639 Hardwick Road.

HBPW was asked to complete the engineering drawings and after a lot of planning and closure of the bridge for a little over 48 hours, engineers worked tirelessly through the night to guide the new structure into place.

Engineering technician, Jonathan Bent, who worked on the project alongside Jon Livesey, said: "The new superstructure features a Network Rail standard U-Deck and, as part of the designs, we have included collision protection beams either side of the bridge.

"In simple terms these are concrete filled steel tubes which absorb any vehicle impacts before the bridge itself, ensuring that the main superstructure is not compromised prematurely."

Jon added: "Because of the relatively short engineering possession period – when the road and rail lines close for the duration of the work - the contractor, AMCO, decided to install the bridge using self-propelled mobile transporters which installed the bridge, collision protection beams and cill units simultaneously, a total of 250 Tonnes of bridge driving down the road – quite an impressive sight!"

nICE One! Awards hat-trick for HBPW!

Three major engineering projects which bear the HBPW hallmark, have taken top honours in prestigious awards.

St Botolph's Footbridge in Boston, Lincolnshire, Derby's London Road Bridge scheme and the £500,000 restoration of one of the North East's most historic monuments, Dunston Staiths, have all achieved recognition.

And, later this month, one of them moves forward to the national finals as it bids for UK glory.

The first to take to the podium was St Botolph's Bridge which took top spot in the 'Medium Project' category of the Institution of Civil Engineers (ICE) East Midlands Merit Awards, held at Nottingham's Belfry Hotel.

But the winning team from Lincolnshire County Council, along with HBPW Associate, Dian Coleman, had barely finished toasting their success, than Derby City Council was called to the rostrum to collect a 'Highly Commended' accolade for its London Road Bridge project – another HBPW design.

Then it was the turn of Owen Pugh Construction who triumphed in the Heritage category of the Constructing Excellence in the North East Awards, thanks to HBPW's prowess with temporary works which figured heavily in the Dunston Staiths project.



Dunston Staiths project: A view through the replacement handrail

Historic Monument

The 526m industrial monument and listed structure – an all-timber jetty built in 1893 – is located on the Gateshead riverside, and once played a crucial role in the international transportation of Tyneside coal.

At its height around 5.5m tonnes of coal a year were taken by rail from the Durham coalfields, loaded onto river ships from the Staiths, and transported around the British Isles and internationally. It is believed to be the largest timber structure in Europe.

Paul Withers, HBPW's Managing Partner, said: "A combination of fire damage and old age, meant the Staiths, last in service in 1982, was in poor condition when ourselves and Owen Pugh got round the table with the Tyne & Wear Building Preservation Trust.

"Our role was to design the temporary works to support this impressive structure, whilst Owen Pugh got on with the job of literally cutting out and replacing rotting frames, whilst also refurbishing other parts of the Staiths."

The project proved such a hit with judges that it not only received top honours at the recent NE awards ceremony but now moves forward to the national finals on October 23rd.

Owen Pugh Construction's Contracts Manager, Lee Buchanan, said: "The judges were impressed not only by the degree of investigation into alternative materials technology but by the highly strategic and carefully planned approach to carrying out the work in an inaccessible and difficult environment.

"The clarity of thought applied to the restoration work was praised as being "impressive", along with the close dialogue between the contractor and the design team, which created the necessary flexibility to make the project such a huge success."



Dunston Staiths project: Fixing bolts into position



Dunston Staiths project: Award winners 2015

Lincolnshire Success

Meanwhile, Dian Coleman, who led the team on the £850,000 St Botolph's project, said of the Nottingham awards: "It really was a great evening for HBPW. The engineering skills within our firm are undoubtedly world class and, as a team, we are now working on some of the most prestigious projects in the country.

"To be recognised in this way is testimony to everyone's hard work, and merely confirms to our clients that they have placed their faith in the right people. We are all delighted."

The Lincolnshire Highways Alliance project beat off competition from 12 other schemes across the region for the award, which recognises exceptional safety and environmental management, innovation and project design within the construction sector.

The 65 metre long bridge spans the River Witham, overlooking St Botolph's Church, known as Boston Stump, and its contemporary bowstring design was chosen following extensive public consultation.



St Botolph's project: Dian Coleman of HBPW, right, pictured with ICE chairman, Prof David Balmforth, left, and David Walton, second left and Richard Waters from Lincolnshire County Council



St Botolph's project: The new St Botolph Bridge

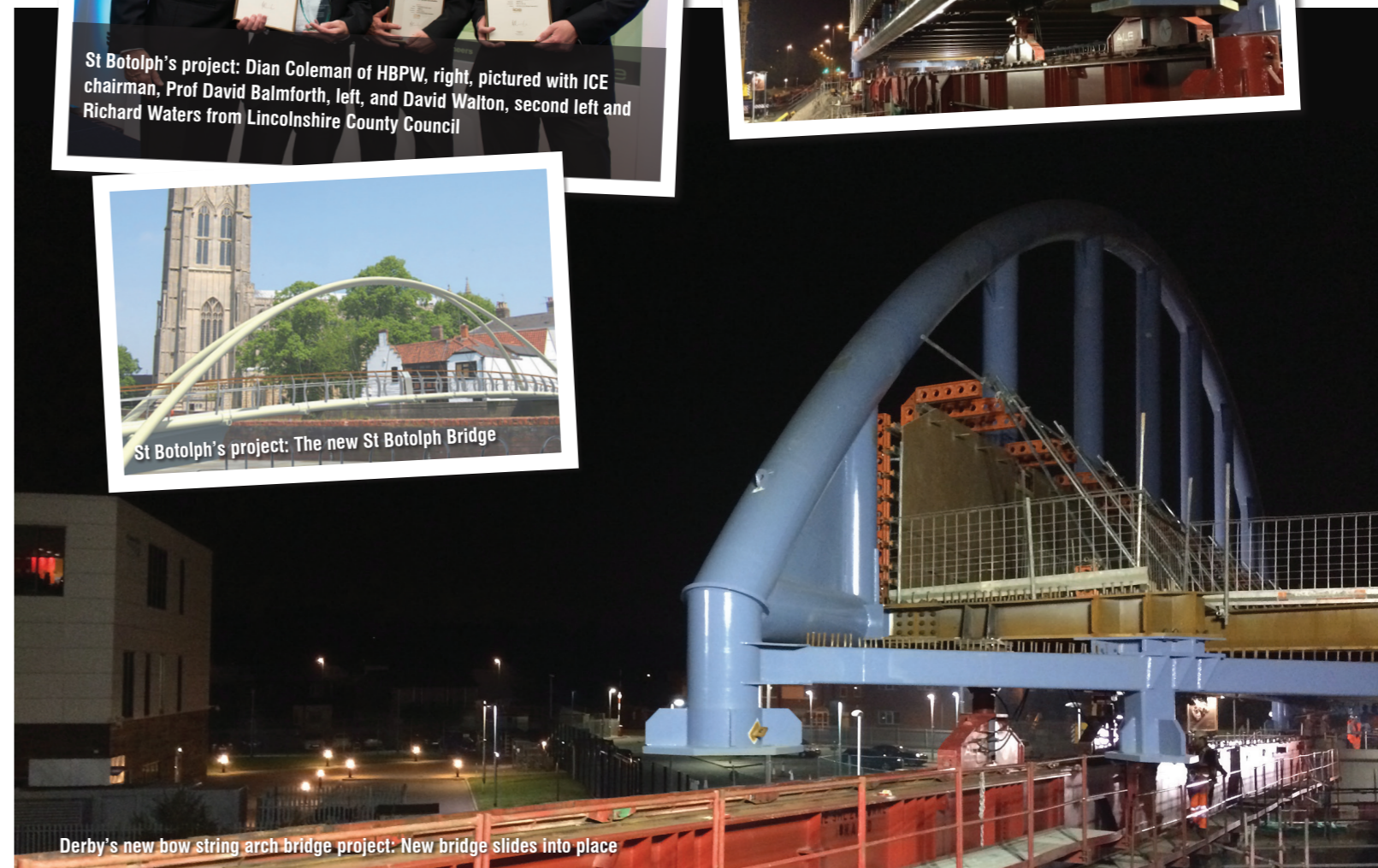
Derby Innovation

The other award winning project, Derby's amazing new bow string arch bridge – designed by HBPW as part of a major initiative to alleviate congestion in the city centre – is located to the south east of the town centre and replaces the former London Road over bridge which took the two lane A5194 across a total of seven railway lines and sidings, all part of the Derby to Birmingham line.

As part of the Derby scheme four old bridge spans have now effectively been replaced by two new superstructures. Three have been lost to the bow string arch bridge which, in turn, has also enabled two supporting piers to be removed to create a more open throat to Derby station.



Derby's new bow string arch bridge project: Almost there!



Derby's new bow string arch bridge project: New bridge slides into place