ISSUE TWENTY

HBPW NEWS

Welcome

Paul Withers - Director

Dear Reader

So far it has been a year of extremes! Early on in 2013 Persimmon and Bovis were reporting an increase in average selling prices, prompting beliefs that the UK was on its way out of recession.

On the weather front we had the worst March for 50 years with snow into Easter, Cyprus was at near collapse, and Moody's Investor Services stripped the UK of its AAA credit rating. But all's well at HBPW despite the merchants of doom peddling their wares!

Take a look at the HBPW blog and you'll see just how busy we've been (www.hbpw.co.uk) and, in this edition, you can read about some of our latest projects including HBPW's major exercise in value engineering on Corbridge railway station's 19th century bridge in Northumberland. Hopefully our work will last another century!

CONTINUED ON BACK PAGE

Cor! What A Bridge For Corbridge!

HBPW completed a major exercise in 'value engineering' when they were invited to give a 19th century railway bridge a 21st century makeover.

Corbridge railway station serves the town of Corbridge in Northumberland, and is located on the Tyne Valley Line running between Newcastle and Carlisle.

Managed by Northern Rail, the small station, which boasts around 80,000 passengers a year, features a listed footbridge which spans the rail line, linking two platforms.

HBPW design engineer, James Cable, said: "The bridge was made of wrought iron and had, over the decades, deteriorated, so AMCO Rail, in partnership with Network Rail contacted HBPW to take the design of the new bridge forward through the construction phase."

The original structure, which had a large staircase on one platform and a smaller one to the other, also boasted a total of 12 columns, 10 on the larger staircase and two on the smaller side.

"As part of the project we were able to reduce programme time by replacing the piled foundations with a reinforced concrete raft foundation which reduced programme time and costs on the project.

James said that piled foundations were normally used in weaker ground, however, ground investigations, had indicated that the 'concrete' solution was achievable at Corbridge. The project took around six months to complete.

"Many of these old bridges have huge historic value locally, hence the need for an identical looking structure, and it is always nice to know that we are playing our part in preparing the station bridge for the next 100 years, only this time the steel structure should last a little longer," added James.

The Newcastle and Carlisle Railway was formed in 1829, and was opened in stages, the first section opening for passenger trains between Blaydon and Hexham in 1835. Corbridge was an intermediate station on that line, situated between Riding Mill and Hexham.

Before the development of effective methods of steelmaking and the availability of large quantities of steel, wrought iron was the most common form of malleable iron.

Client: Network Rail
Contractor: AMCO Rail Ltd

A Revamp for Corbridge Footbridge

Corbridge Footbridge Weathered By Time

HBPW LLP
Civil & Structural Engineering Services

Center Of The Action

Client: Center Parcs **Contractor:** Birse Civils

One of the strongest leisure brands in the UK, Center Parcs, has been working with HBPW and infrastructure contractor, Birse Civils, on its new £250m complex at Woburn Forest near Milton Keynes.

A Center Parcs Complex

The infrastructure of the new holiday village, the fifth to be built in the UK and one of the largest leisure projects in the country, is being developed by Birse Civils' Northampton office. During the early part of the construction phase service roads needed building so that contractors could access and exit the site, which is set in 365 acres of forest and will feature a 17,000m² lake.

Chartered engineer, Mark Partridge from HBPW, said: "The main design for the project was done by civil and structural engineering firm, Hannah Reed, however, Birse Civils asked HBPW to design the service roads and a number of the site's major retaining walls, which were up to 10 metres high and utilised secant piles.

"Most of the service roads will continue to be used once the site has opened. It is always good to be involved in prestigious projects and if the other four Center Parcs are anything to go by, this will go on to become one of the UK's leading leisure villages."

The existing four Center Parcs are set in 400 acres of beautiful forest with lakes and streams, and each features restaurants, cafes and shops as well as indoor and outdoor activities. Woburn Forest will boast 625 lodges, a 75 bedroom hotel. The site has seven miles of roadways in total, created sympathetically within the forest environment.

It will take 1,500 people to build the Woburn Forest complex and a further 1,500 people to run it once it has been completed in spring 2014.

Center Parcs has just celebrated 25 years of success in the UK and has been the UK market leader for family short break holidays for many years.

HBPW Makes History With National Trust

One of Britain's most historic National Trust sites has been getting a helping hand from HBPW, with the development of an elevated walkway that now links its new car parks with the main visitor attractions.

Gibside Hall, which is located near Rowlands Gill at Gateshead in the North East, is a Georgian 'grand design' on a spectacular scale, and the vision of coal baron George Bowes.

After centuries of decline, it is slowly being restored for people and nature and, as part of the on-going initiative, new car parks have been constructed to accommodate greater visitor numbers.

However, the only available space to locate them was on the lowest end of the grounds which meant a pedestrian access walkway was required from the parking area to the wider visitor attractions and the grand hall, now just a shell.

This and above: 3d Models of the Elevated Walkway

Principal Engineer Dian Coleman, said: "The walkway is approximately 100m long. The deck and balustrades are constructed from Opepe timber hardwood which, through its natural durability, can achieve the required design life for the structure and also blends sympathetically with the forest landscape. The timber walkway is elevated up to 5m above the forest floor by steel 'goal posts' supports."

But the project wasn't without its challenges. "Due to the poor ground conditions and difficult access a driven steel mini pile foundation solution was adopted. Pile installation was achieved through the use of a hand positioned pneumatic hammer or mini digger attachment allowing access to even the most difficult sloping locations.

"Fortunately, we managed to overcome all obstacles to produce what is now a major addition and feature of Gibside Hall," he added.

The design and build contract was led by Owen Pugh with HBPW acting as engineers.

Client: National Trust
Contractor: Owen Pugh
Specialist Timber supplier: Heritage

Gaming Software Helps HBPW Design

3ds Max Software

Hi-tech 3D modeling software which has been the industry standard in Computer Generated Imagery (CGI) for years, is now playing a major part in HBPW's visualisation work.

Senior Engineer Alastair Reid is overseeing the implementation of 3ds Max software into the firm.

He said: "Until recently we had only been using Sketchup to create 3D visuals for clients, which although accessible and powerful in its own right, has its limitations.

"3ds Max takes us to a new level. It is becoming increasingly popular and has its roots in the film and gaming industries, meaning that we can now produce visual representations of what finished projects will look like before they have even left the paper.

Visualisation on 3ds Max Software

"This is not only key to tendering but, from a client perspective, gives them far greater comprehension of how complicated schemes will evolve and look in the final event."

Alastair said the new software also had a number of practical applications. "Sometimes you can find yourself in a situation where individuals object to something on the basis that they perceive it will be detrimental to the environment. However, by producing a visual, we are often able to allay fears by showing that the image in the person's mind is not always the reality," he added. Planners also profit from good animations.

"Good 3D visualisations can certainly aid the planning process," added Alastair, "and, where projects are particularly complicated – bridge sections, for instance, might need replacing – we can use sequencing animations to show how the old structure will be removed ahead of the new one being lifted into place.

"3ds Max helps us bring people's imaginations to life in a positive way, so use of this software will be good for the firm. People are asking for it more and more and we are now in a position to meet client needs."

3ds Max Software at Work

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Fish Pass The Quality Test!

This and right: Making life easier for fish! The new fish pass

Eels and fish in South Yorkshire are having a much easier life thanks to a multi-agency river project which HBPW has played a key role in.

The Don Catchment Rivers Trust (DCRT) secured funding from the Environment Agency to install a multi-species fish and eel pass on the Hadfield Weir at Meadowhall in Sheffield, South Yorkshire.

HBPW Principal Engineer, Dian Coleman, who carried out the detailed design and temporary works, said: "A weir is a barrier across a river designed to alter the flow characteristics, however, the negative effect of that process is that fish are no longer able to migrate up river to their spawning grounds.

"Fish passes, as the name implies, are installed to help fish make their way up river. The type installed at Meadowhall was a Larinier fish pass which uses a series of precisely positioned plates, or 'baffles', to dissipate energy from the water flowing down a formed channel, reducing the average water velocity and allowing the fish to pass more readily."

But the project, which cost several hundred thousand pounds, was not without its challenges.

"A temporary cofferdam was constructed out of bulk sand bags to allow the area to be drained, but it was not economically possible to build a temporary dam high enough to withstand high river flows experienced after periods of prolonged rain.

"At the time of construction rainfall was very heavy and, as we anticipated, it flooded on a number of occasions, but no damage was done and work resumed after flood waters were pumped out. The project finished on schedule with no major losses."

The pass was installed as part of the strategic objective to restore the ability of fish and other creatures to move more freely within the river system, and took two years for directors of the Don Catchment Rivers Trust to bring to fruition.

"In terms of the structural aspects it was relatively simple, with the main challenges being constructability and achieving the desired aesthetic appearance and functionality, however, it is a major step forward in enhancing the biodiversity of the river," added Dian.

The fish pass initial design was undertaken by consultants, Mike & Matt Beach. The project was delivered on a Design and Build basis by A Torn Construction, for whom HBPW acted as civil engineering designer in conjunction with Fishtek who undertook the detailed hydrological design of the fish pass. The project was managed by Turner & Townsend on behalf of the DCRT.

Client: The Don Catchment Rivers Trust (DCRT)
Contractor: A Torn Construction Ltd
Specialist Fisheries Consultant: Fishtek Consulting

CONTINUED FROM PAGE 1

Meadowhall's fish in Sheffield are also having an easier time thanks to Dian Coleman's work on the multi species fish and eel pass at Hadfield Weir, whilst Alastair Reid is now keenly promoting hi-tech 3d modeling software within the firm. By overseeing the implementation of 3ds Max software, HBPW can now offer clients an even more sophisticated visual representation of what finished projects will look like before they have even left the paper.

The range and diversity of our work never ceases to amaze, none more so than at the National Trust's Gibside Hall in Northumberland where a new elevated walkway is testimony to the HBPW team's engineering skills. After centuries of decline, the hall is slowly being restored for people and nature and, as part of the on-going initiative, new car parks have been constructed to accommodate greater visitor numbers.

However, the only available space to locate them was on the lowest end of the grounds which meant an elevated pedestrian access walkway was required from the parking area to the wider visitor attractions.

Read all about it!

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