

## Panel for Historical Engineering Works Newsletter

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Bideford Long Bridge refurbishment, Devon

### Historic Bridge and Infrastructure Awards 2010

#### David Greenfield

Peter Hansford, President of the ICE, made the presentations at this year's Awards ceremony in Great George Street, celebrating innovation, sustainability and good practice in civil engineering heritage conservation. Grateful thanks are again due to English Heritage, Network Rail, British Waterways, ADEPT Bridges Group, NCE and ICE PHEW for their continuing support.

The judges selected three outstanding projects for **Awards:**

- **Bideford Long Bridge** refurbishment
- **Spa Footbridge** restoration
- **Stanley Dock Bascule Bridge** refurbishment

Two other projects received **Commendations:**

- **Vale Royal Locks** rebuilding
- **Wilford Suspension Bridge** refurbishment

In addition, a Special Mention was awarded to British Waterways.

The 24 masonry arches of the Grade I Listed medieval bridge at Bideford have been modified and widened over the years, most recently in 1925 when reinforced concrete cantilever footways were constructed on both sides. Bridge-owner, Devon County Council, imposed a three ton weight limit in 2001 due to severe deterioration of the concrete and corrosion of the reinforcement. Following wide-ranging consultation with key stakeholders, various options were considered to provide a long-term solution, including complete replacement of the cantilevers with new lightweight steel footways so that the original masonry facades would be exposed, or replacement with modern high-strength materials aimed at mimicking the present arrangement.

When the scale of costs and traffic disruption of these options became apparent, a technical review was carried out to identify more economical and less disruptive solutions. Ultimately a scheme was selected comprising concrete repairs and the installation of an impressed current cathodic protection (ICCP) system, which came in at about one third the cost of the replacement options. In the event, Concrete Repairs Limited installed one of the largest ICCP systems in the country, to a design developed by Devon County Council and its specialist corrosion consultant, Brian Wyatt. A full scale mock up of the cantilever was constructed so that proposed methods and materials could be trialled.

Spalled concrete was cut out and new links were welded into position to ensure electrical continuity. The outside beams were shuttered and re-cast using flowable concrete and the internal beams were reformed with sprayed concrete.



Mike with Library staff © ICE

## John Rennie @ 250 by Peter Cross-Rudkin

The Institution of Civil Engineers will hold an exhibition to celebrate the life and works of John Rennie (1761-1821), the 250th anniversary of whose birth fell on 7 June.

Projects for which he was responsible included the machinery of Albion Mills in Southwark, the Lancaster, Crinan and Kennet & Avon Canals, Kelso, Waterloo and Southwark Bridges, the drainage of East, West and Wildmore Fens in Lincolnshire, Rudyard Dam, Plymouth Breakwater, Leith and London Docks, Bell Rock Lighthouse, Holyhead and Dun Laoghaire Harbours and Sheerness Dockyard. Eight specially-designed screens in the exhibition will display different aspects of his career. The images have been selected from a wide variety of sources around the country and will be complemented by a number of artefacts from the Institution's own archives. Each exhibit will have a brief description and there will be a printed guide that will contain fuller details and set them in a wider context.

John Rennie was one of the leading civil engineers of the early nineteenth century, following John Smeaton and William Jessop and more or less contemporary with Thomas Telford until his death at the age of only 60. He is not as well known today as he ought to be, and it is hoped that this exhibition will contribute to a greater awareness of his achievement.

It will be held in the Council Room of the Institution at 1, Great George Street, Westminster. After a formal opening on 26 July, it will be open, free of charge, until 31 August.

## Year of the Light Lecture Information from Press Release

A packed auditorium enjoyed a fascinating insight into the construction of the Bell Rock Lighthouse on Thursday, 10 March, when Professor Roland Paxton MBE FRSE delivered the Year of the Light Lecture. The lecture, which was fully booked, was held in Angus College in Arbroath, the town where the great stones that were used to build the lighthouse were cut into shape before being ferried out to the Bell Rock.

"The Bell Rock Lighthouse rightly deserves its accolade as one of the seven wonders of the Industrial World," said Professor Paxton, who is the author of *Dynasty of Engineers – The Stevensons and the Bell Rock*. "Even using the technology of the time with our present day knowledge, we could not improve on the design or construction of the Bell Rock Lighthouse."

As well as describing in detail how Stevenson and his team had constructed the 115-foot lighthouse on the Bell Rock, eleven miles out to sea, Professor Paxton showed the audience several early illustrations of the interior of the Bell Rock Lighthouse, including one of the library or 'Stranger's Room', the room immediately below the lightroom.

At the end of his lecture, Professor Paxton revealed how, while researching 'Dynasty of Engineers', he discovered papers that have finally laid to rest the feud that has rumbled on between the Rennies and the Stevensons for several generations about who should be credited for designing the Bell Rock Lighthouse.

"Stevenson's definitive account of the construction of the lighthouse played down considerably the part played by Rennie," said Professor Paxton. "However, I uncovered reports and letters from Rennie which confirm that he made major and very important contributions to the final design of the lighthouse and, despite the Stevensons later implying that Rennie never went to the Bell Rock after the first four courses had been laid, I came across a Rennie report of 1809 showing him on site and giving directions when the tower was nearly two-thirds complete."

Professor Paxton described how Stevenson's refusal to share the limelight for the Bell Rock Lighthouse with his Chief Engineer had led to a bitter and very public dispute between the two families. As a result of my research, the Stevensons, after nearly one and a half centuries, have accepted the role Rennie played and that both men made invaluable contributions.

To celebrate the 200th anniversary of the completion of the Bell Rock Lighthouse in 1811, the people of Arbroath are holding a series of special events throughout 2011, the Year of the Light. For more information about the Year of the Light, which is sponsored by JD Wetherspoon, or to download the programme of special events, visit [www.angusahead.com/bellrocklighthouse](http://www.angusahead.com/bellrocklighthouse).