

BTS 2018 - DAY 2 Speaker programme, Wednesday 10th October

Session 1

9.05am – 9.10am

Welcome



Ivor Thomas

9.10am – 9.40am

Ivor Thomas, BTS Chair – The David Wallis Lecture

9.40am – 10.10am

Professor Robert Mair, Cambridge University, President, Institution of Civil Engineer - Developments in Smart Infrastructure and Construction for Tunnelling

The Centre for Smart Infrastructure and Construction (CSIC) at Cambridge is transforming the future of infrastructure and construction through smarter information enabling better decision-making. The presentation will describe some of CSIC's recent activities on tunnelling projects employing a wide variety of new tools and technologies, including fibre optic strain measurement and low power wireless sensor networks. These innovations have been tested and proved on some major tunnelling projects in the UK, including Crossrail and London Underground station upgrades.



Professor Robert Mair

10.10am – 10.30am

Kate Hall – HS2 Design Director

The presenter will describe the challenges to date, and that lie ahead in delivering the design of what is one of Europe's largest infrastructure projects – HS2



Kate Hall

10.30am – 10.50am

Derek Parody, A303 Amesbury to Berwick Down Project Director, Highways England – More than a tunnel: Maximising the benefits of a major infrastructure project in a World Heritage Site

A303 Amesbury to Berwick Down scheme is eight miles long and includes a 1.8-mile tunnel beneath the Stonehenge World Heritage Site and is part of Highways England's wider upgrade to the A303 corridor. Derek will outline the project's ambitious approach to benefits exploring the role of a tunnel scheme in maximising the value of an internationally recognised cultural heritage site, the environment, the community, the region's economy and transport efficiency.



Derek Parody

10.50am – 11am

Q&A

11am – 11.30am

Coffee

Session 2

11.30am – 12pm

Dr Benoit Jones - A 20-year history of stress and strain in a shotcrete primary lining

How does load come onto a shotcrete primary lining as it is advanced? What are the effects of cross passage construction, underpassing and secondary lining installation? What influence do temperature changes, shrinkage and creep have on the stresses and strains? What happens to ground and groundwater loads on a primary lining in the long-term? Is there load-sharing between primary and secondary linings? All these questions and more will be answered in this presentation.



Dr Benoit Jones

12pm – 12.20pm

Rosa Diez, Project Director, Mott MacDonald - Testing sprayed waterproofing membranes for composite action

Sprayed waterproofing membranes have been used widely in the construction of sprayed concrete lined tunnels. However, it is increasingly being claimed that they can allow full composite action to occur between primary and secondary linings. Adequate characterisation of the properties and behaviour of these products under the conditions to which they will be subjected in the tunnels, is crucial to the demonstration of the composite behaviour. It is therefore the performance of the waterproofing materials under realistic moisture exposure conditions and sustained loading that would need to be investigated to replicate the expected tunnel environment during its design life.



Rosa Diez

This paper reviews the previously published material properties for EVA-powder and reactive resin based waterproofing membranes and presents the results of a testing programme that was carried out as part of the Crossrail project in London. 'Wet conditioned' samples were subjected to rapid tensile testing, displacement controlled testing and sustained load testing and the results, in terms of bond strength, stiffness and modes of failure of the waterproofing materials are compared with tests carried out on "dry" samples.

Despite the limitations of the testing programme undertaken, the significant creep behaviour exhibited by these materials under testing and their sensitivity to water raises concerns in terms of whether they are suitable for maintaining composite action in the long term.

12.20pm – 12.40pm

John Cumins, Dragados, and Cate Anthony, Dr Sauer & Partners: Delivering The Bank Station Capacity Upgrade Project

Dragados SA are working with London Underground on a £650M project to upgrade Bank underground station in order to reduce congestion by increasing capacity, improve passenger access and movement in the station by minimising journey time, provide step free access and improve evacuation times from the station in an emergency. The Bank Station Capacity Upgrade (BSCU) scheme includes the construction of a new platform and southbound running tunnel for the Northern line. The existing southbound platform will be converted into a new passenger concourse which will be connected with the new platform tunnel through four new cross passages. New escalator barrels, interchange links, moving walkway, shafts, cross passages and adits will provide connections to the DLR concourse tunnel and to the new station entrance



John Cumins



Cate Anthony

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Continued...

Through collaboration Dr Sauer & Partners and Dragados have found some exciting innovative design and construction solutions that will be presented by Cate Anthony and John Comins, including: Constructability review during design; SCL access tunnels over existing assets; Option A joint; Combined lining design; Challenges during construction; Resources; Ventilation and dust control.

12.40pm – 1pm

Dave Hindle, Innovative Support Systems Ltd.

Over the past eight years Innovative Support Systems have been developing and supplying a new form of lightweight steel support system for stabilising old tunnels and culverts that can be installed rapidly and safely to provide, temporary support and be readily incorporated into a long term structural concrete lining. The presentation will illustrate the product's key fabrication and installation characteristics together with actual installations including a short video produced by Network Rail on the refurbishment of a major Brunel tunnel in the Southwest of England.



Dave Hindle

1pm – 1.15pm

Q&A

1.15pm – 2.30pm

Lunch

Session 3

2.30pm – 3.30pm

Technical Excellence Panel Discussion

Judging the quality of civil engineers and their work has been one of the most difficult tasks facing both the employers of individuals and the clients of organisations. Aesthetics are notoriously subjective, and technical quality, particularly with respect to innovation, maintainability and durability, is hard to differentiate between the excellent and the ordinary.

How do we make those judgements? What evidence are we looking for? How frequently, looking back, are we happy that we made the right decision? What are our professional institutions doing to nurture and value technical skills, and is it enough? Does the BTS and/or ITA do enough? What do we need to do in the future, and why?

We will put these and other questions to our panel of technical experts during a free-ranging discussion. The session will be chaired, and the audience will be invited to put questions to the panel either in writing or orally.

3.30pm

Conference Close and Exhibition

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