Professor Roger Plank BSc PhD CEng MICE FIStructE, University of Sheffield

Roger studied Civil Engineering at the University of Birmingham, graduating in 1970, and continued there to gain his PhD in 1973. After a short period in practice, he became a chartered member of both ICE and IStructE in 1976, and in the same year took up an appointment as a lecturer at the University of Sheffield, with responsibility for structural design. He developed a close working relationship with the steel construction sector, and had a leading role in establishing the internationally renowned structural fire engineering research group. This played a key role in Cardington fire test programme on BRE's Large Building Test Facility, which has had a major influence on structural fire engineering design. He was appointed as Corus Professor of Architecture/Structural Engineering in 1995, and became Head of the School of Architecture in 2004.

His honours include the Institution of Structural Engineer's Henry Adams Award (1997), and the ASCE's Raymond C Reese Research Award (2005). His research in structural fire engineering has also led to the development of the award-winning design software, Vulcan which is being increasingly used in practice. He has held several positions as Visiting Professor and specialist consultant, and has chaired a number of committees for the UK and European steel construction sector.
Although he retired in November 2009, he remains active in both research and consultancy. He is currently lead member of an expert panel advising the DCLG on fire research, chairman of the Steel in Fire Forum, a member of the Steel Advisory Group which provides direction for the EU's Research Fund for Coal and Steel, and an evaluator for the European Research Council.

He is currently Senior Vice President of the Institution of Structural Engineers.

Abstract from Roger's presentation "Structural Fire Engineering Past, Present & Future"

Structural fire engineering, for steel and composite building structures in particular, has progressed dramatically in the past 20-30 years, based largely on scientific research into how building structures respond to increasing temperatures. In parallel with this, fire science has been applied to provide improved methods for modelling the fire itself. Traditional approaches to determining structural fire resistance appear to have been based on very simplified considerations and the process was normally conducted in isolation from, and subsequent to, the main design. One consequence of this was that the cost of applied fire protection was very high, making steel construction less competitive, especially for multi-storey buildings. Early research followed the familiar concept of idealising the structure as a series of isolated beams, columns and slabs, but considering the effects of parameters such as the load level and degree of exposure. This led to the consideration of structural assemblies culminating in the test programme on the Large Building Test Facility at Cardington. This demonstrated the potential importance of considering whole structure behaviour and led to the most significant changes in design approach. The collapse of the twin towers at the World Trade Center was another landmark and has shifted the focus of attention to robustness of buildings and the behaviour of connections in particular.

This paper reviews these developments, discusses the principal outstanding issues and speculates on future directions.