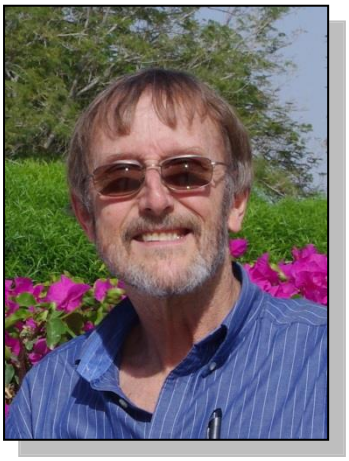
Professor Ian Burgess

Professor of Structural Engineering
University of Sheffield

Department of Civil and Structural Engineering
Sir Frederick Mappin Building
Mappin Street, Sheffield, S1 3JD, UK.

Telephone: +44 (0) 114 222 5060
Mobile: +44 (0) 7950 763708

Email: ian.burgess@sheffield.ac.uk



Qualifications

BA (Cambridge), PhD (London), CEng, MIStructE

Profile

Ian Burgess studied as an undergraduate at the University of Cambridge, and as a doctoral student at University College London. His research was carried out in the Structural Stability Research Group led by Professor Henry Chilver, on the general stability theory of one-way buckling systems such as reactor pressure vessel linings. During a two-year NRC fellowship at McMaster University in Canada he became interested in dynamic instability phenomena, and began working in the general theory of flutter in aeroelastic systems. On returning to the University of Sheffield in the United Kingdom he identified that this phenomenon, usually associated with fluid-structure interaction, was a cause of the directional instability of slender piles driven into soft soils, and developed a theory to predict its occurrence.

In the mid-1980s he began a fruitful and enduring collaboration with Roger Plank (now retired as Head of Architecture at Sheffield) in developing numerical techniques for modelling of the behaviour of steel and composite elements in fire. After much development the *Vulcan* software which emerged from this is now capable of non-linear modelling of 3-dimensional composite buildings as temperature distributions develop through the cross-sections of both beam-columns and slabs. The full-scale fire tests on the multi-storey building at Cardington were a vital ingredient in the development of the software, and in understanding the complex structural interactions which take place in fire. *Vulcan* was the winner of two British Computer Society national awards in 2005. The main thrust of his research remains in numerical modelling, but some very successful experimental work has been done at Sheffield in developing a component approach to connection modelling for fire conditions. The most important current theme, after the tragic events of 11 September 2001, concerns the robustness of connections in fire and the avoidance of consequent progressive collapse of buildings. So far the research programme on fire has 30 PhD and 4 MPhil graduates, and has generated more than 280 publications. Two companion papers, published in the *Journal of Structural Engineering*, were awarded the ASCE's Raymond C Reese Prize in 2005.