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Editorial

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This issue of *Bridge Engineering* breaks new ground with the first two papers proposing innovative concepts for the form and articulation of bridges (Franck, 2011; Harryson, 2011) and the final two addressing the behaviour and repair of historical structures (Sreeves, 2011; Tilly, 2011). Nevertheless, all four are the work of individuals and demonstrate the commitment and enthusiasm of such individuals who are so typical of the bridge engineering community. It is indeed an honour to be part of such a community and reassuring to know that the opportunity still exists to contribute as an individual; that there is no shortage of good, innovative ideas to ensure its future and that there are enthusiastic young engineers keen to follow in the footsteps of their more experienced colleagues.

The first of these papers, which is an award-winning paper based on work that formed part of a Masters project in civil engineering at the Swiss Federal Institute of Technology (École Polytechnique Fédérale de Lausanne), describes the research and design of an innovative opening mechanism for a long-span footbridge (Franck, 2011). A general overview and classification of existing design solutions and opening mechanisms are given and then three innovative solutions are developed for the brief under consideration. For the preferred solution, the influence of geometrical parameters on the structural and kinematic behaviour of the bridge is analysed and design solutions for the primary elements are proposed.

The second paper describes an investigation into a novel concept consisting of V-shaped glass-fibre-reinforced polymer sections and plates acting compositely with an ultra-high-performance steel-fibre-reinforced concrete deck (Harryson, 2011). It is demonstrated that the concept is technically feasible and that the form of the structure can be both manufactured and fabricated efficiently. However, it is acknowledged that further work is required before a prototype can be constructed and that the economics of such a solution are currently unattractive unless life-cycle costs and the benefits of a short construction time are the dominant considerations.

The third paper describes an investigation into the dynamic behaviour and collapses of early suspension bridges (Tilly, 2011). From a study of the tragic events associated with the collapse of four different suspension bridges between 1830 and 1850, it is identified that pedestrian-induced vibration or asymmetric loading were the key factors in each case. As a consequence various actions and design developments, such as the adoption of stiffer decks, sought to limit the impact of these effects, but despite our significantly enhanced understanding of such behaviour, lively bridges continue to be built for a variety of reasons. This paper discusses the characteristics of such structures and highlights the key features that need to be addressed to ensure that their dynamic behaviour can be tolerated.

The final paper describes the repair of two 1906-built riveted steel plate girder bridges owned and maintained by a volunteer-run organisation operating passenger trains hauled by restored steam locomotives (Sreeves, 2011). It includes details of how both severe corrosion and accident damage were repaired in a simple and cost-effective manner that has preserved the heritage of the railway. It also identifies techniques that can be reliably applied to early steel bridges despite the challenges that are a consequence of the many corrosion traps and inaccessible areas associated with riveted construction.

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