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Editorial

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Welcome to this themed issue of *Bridge Engineering* dedicated to cable-supported structures.

From historic times to the present day, cables have continued to be favoured among bridge engineers as the most efficient means of transmitting tensile forces for bridges of all types. The use of cables on smaller bridges often helps to make an ordinary structure into a striking iconic statement, whilst the use of cables on very large bridges is virtually unavoidable.

In our current era of austerity it is perhaps timely to recognise and welcome the savings and benefits that can be achieved when cable support is adopted. Designers and clients who choose bridge structures which operate in the most efficient way are more likely to produce value for money and be more successful in raising the necessary budget for their project, especially in today's financial climate.

The elemental parts of bridge structures are usually required to act in one of three primary ways (tension, compression or bending). Those bridges dominated by tension will normally be lighter and use less material; those dominated by compression will be heavier, whilst those dominated by bending will tend to be wasteful of material. Depending on the size of the bridge, it is usually tempting to select the lightest superstructure possible and thereby minimise costly foundation expenditure. This logic tends to invite early consideration of cables as an integral part of the design arsenal, with enhanced aesthetic possibilities as an added bonus.

Before deciding to use some form of cable support it is important, among other things, to review case studies of similar structures, to check on cable layout ideas and possibilities, to assess likely future maintenance requirements and to look for any secondary effects that may influence the design. This issue of *Bridge Engineering* has been fortunate enough to assemble papers covering each of these topics.

Many thanks are due to the six groups of authors published in this issue. They have provided us with

- a case study on design and construction of the Fabian Way cable-stayed bridge steel superstructure in Swansea (Sanders *et al.*, 2010)
- a case study on design and construction aspects of the Busan–Geoje fixed link on Korea's south coast that

incorporates concrete cable-stayed bridges (Yeoward *et al.*, 2010)

- a worldwide overview of cable-stayed variations with unconventional layouts of cables that can help to achieve maximum structural efficiency (Ruiz-Teran and Aparicio, 2010)
- a feasibility study into the suspension cable replacement/augmentation on the Forth Road Bridge in Scotland that may be required if current maintenance strategies should find difficulty in bringing erosion of the cable to a halt (Colford and Clark, 2010)
- a review of the design for the new Forth replacement crossing that has been proposed to augment the capacity of the existing two Forth crossings in Scotland, especially if current capacity should have to be reduced (Carter *et al.*, 2010)
- a study into cable excitation in cable-stayed bridges caused by small movements of deck and/or tower (Macdonald *et al.*, 2010).

It is hoped that readers will enjoy these papers and the variety of ideas that they stimulate.

In addition, there may be more! There was such a good response to the call for papers for this themed issue that it is expected that there will be a second issue devoted to cable-supported structures in the near future.

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