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Editorial

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With the ageing of the United Kingdom bridge stock, the last 50 years have seen the increasing importance of maintenance to the bridge engineer. The 'new' materials such as reinforced and pre-stressed concrete, once thought to be virtually maintenance free, have not always performed as expected. In many cases, the techniques of past construction and its supervision have proved less satisfactory than those we would require today. We now give greater consideration to long-term protection. Durability and inspection are keywords in modern bridge design.

Fifty years ago, computers were not available to assist designers. Calculations were undertaken by longhand, based on theory and, necessarily, codified to make them useable. Since then, research, theoretical development and the ability to handle many variables within comprehensive computer models, have sometimes exposed previous deficiencies in the design approach. Often these deficiencies have manifested themselves on our bridges, occasionally with serious consequences.

Fifty years ago, traffic volume on our highways was much less, with fewer heavy vehicles of lower maximum weight and lower axle loading. Our traffic load models have had to be revised several times since. The result has been potentially greater loads, increased fatigue effects and reduced accessibility for inspection and maintenance.

The consequence for the manager of a bridge stock, has been the possible erosion of each structure's utility, through material deterioration, possible design deficiencies of the past and increased loading requirements. This has led to an evaluation or assessment of the bridge stock. In the United Kingdom, this was

first recognised by the railways with their older network, and a programme of assessment commenced in the 1920s. For UK highways, the first national assessment began in the 1960s, followed by a further programme in the 1980s. Bridge evaluation is now a standard component of modern bridge management.

Today, papers on bridge management and maintenance are a feature of most bridge journals and conferences. This 'Special Issue' gives an opportunity to focus on the subject, but it will continue to appear in future issues of *Bridge Engineering* as well. Within this issue, there is a good range of papers covering management, inspection, assessment, repair and strengthening.

For the bridge manager, the last two decades have seen rapid development of many tools to assist. These include finding 'hidden strength' through better assessment, new materials and methods for repair and strengthening, and improved access methods for inspection and maintenance. All are covered in the papers here.

As each country's bridge stock develops into maturity, more information and experience is being shared, and is already considerably influencing new design. Bridge management is moving from preserving the condition of an individual structure to cost-effective provision of route or network reliability. In future, bridge management will be an integral part of transport asset management. Many systems are being set up, but it is too early to assess their effectiveness. The next decade will see much happening in bridge management and maintenance.