

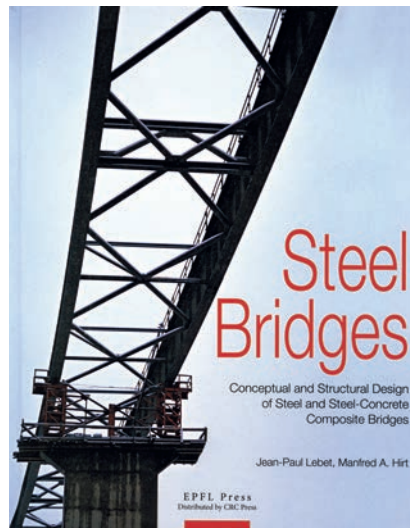
# Review



Winner of the Institution's Guthrie Brown Award for a bridge-related paper published in *The Structural Engineer* in 2012, Matthew Myerscough comments on a book by two steel bridge experts.

## Steel Bridges: Conceptual and Structural Design of Steel and Steel- Concrete Composite Bridges

**Authors:** : Jean-Paul Lebet and Manfred A. Hirt  
**Publisher:** EPFL Press  
**Price:** \$149.95  
**ISBN:** 978-1-466-57296-6



**This work** is the product of two professors at the Swiss Federal Institute of Technology at Lausanne (EPFL). Based on over two decades of courses taught at the university, the principal focus of this text is highway bridge engineering, both in steel and composite construction. Beam type structures are covered almost exclusively, comprising plate girders, box girders and trusses, although a chapter towards the end of the book examines arch bridges. The subject matter has been divided into five principal sections, with the introduction containing a brief history of steel bridge construction which is beautifully illustrated with numerous large colour photographs.

The core of the book is contained within the next two sections; conceptual design, and analysis and design. The former deals with structural forms, construction details, fabrication and erection of steel structures, and includes a chapter dedicated to reinforced concrete slabs for composite bridges. Understandably, this section is not mathematically heavy, and the wealth of practical guidance provided (for example the detailing of slab edge drip features) demonstrates the strong links EPFL

has established with industry partners. Individual chapters have been divided with sub-headings, italic phrases and plenty of diagrams and illustrations (usually at least one on every page), so there are no dense blocks of text.

Using Eurocode terminology, the analysis and design section explores actions on bridges and the limit state philosophy, before detailing calculation methods for determining bending moments, forces and torsions. Subsequent chapters contain all the principal calculation checks required for plate and box girders, followed by the analysis and design of composite beams, cross and plan bracing and consideration of

overall bridge stability. Numerical examples are included within these chapters, and although mathematical complexities are present (for example the simplified method for calculating pre-stress losses in a composite bridge), they are not overbearing.

Final sections touch upon the specifics of railway and pedestrian bridges by highlighting key differences compared with highway structures, such as the increased importance of dynamics in footbridge design and fatigue in railway structures. The last chapter exercises the analysis and design concepts detailed earlier, through a worked numerical example of a multi-span plate girder composite highway deck.

It is not hard to see why the original French edition won the Roberval Award 2010 for best book for higher education in the French language. While the content is accessible to students, the book would certainly be of great value to the professional engineer too. Clearly the authors have significant expertise in this field and their interest in bridges is apparent, which increases readability. This text would make a worthy addition to the bookcase of any aspiring or practising bridge designer.

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### Mathew Myerscough

Matthew Myerscough is a Bridge Engineer at Cass Hayward. He studied Civil Engineering at University College, Durham, and is currently enrolled on the University of Surrey's MSc in Bridge Engineering.