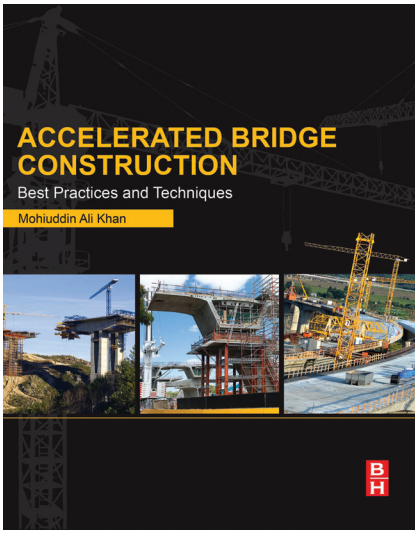
Review

Ian Firth is unimpressed by a book that appears to offer little that is new to its intended audience and questions the real-world experience of the author.

Accelerated Bridge Construction: Best Practices and Techniques



Author: Mohiuddin Ali Khan
Publisher: Butterworth-Heinemann
Price: £73 (paperback/ebook)
ISBN: 987-0-12-407224-4

It is not clear for whom this book is intended. As a practising bridge engineer of many years' experience, I found the book hard to read because, although it clearly purports to be addressing new concepts and developing technologies, I found nothing new in it at all. So, if the intended readership includes practising bridge designers and constructors, then it misses the mark. If, however, the book is intended for students of bridge construction, then it could possibly be helpful for some. In any case, it is clearly a book for the US market and it does not translate well to European readers.

At its heart, the book's central theme is an old but important one; namely, that it is a good idea to maximise off-site prefabrication and thus minimise on-site construction activity through the installation of large sub-assemblies. This principle has been the focus for economic bridge construction for as long as I can remember, so is not new. But the book presents it, and repeats it ad nauseam, as if it were a new idea. The benefits of such construction techniques include achieving better quality and greater economies, minimising disturbance and disruption on site, easier environmental management, reduced risk and greater confidence in achieving the programme, to name just a few, and the book spells this out. But the author does this very often by making sweeping statements and broad generalisations which do not adequately represent the variations of the real world.

The principles of prefabricating large components off site, delivering them to site and installing them using a large crane or other suitable method, with suitably detailed site connections, are well understood and commonly used, certainly throughout Europe. It is possible that such principles are not so widely followed in North America, and this might be the rationale for the book, but the author should at least acknowledge that the ideas are not new. For example, the use of robotic welding techniques for fabricating steel girders, claimed in the book to have "added a new dimension to structural steel fabrication", is at least 30 years old in the UK.

On the question of construction cost benefits, the author somewhat surprisingly states that 'accelerated bridge construction' should be considered even if it results in a 30% increase in cost. One of the main reasons for adopting this form of construction, and a reason why it is so widely used, is that it reduces costs, not increases them.

The layout and structure of the book is a little confusing, jumping between subjects in a less than logical manner, and there is a fair amount of unnecessary repetition and unfortunate inconsistency. The book also uses abbreviations to an annoying degree, making it difficult and frustrating to read. Nearly every concept, material or process is given capitalised initials when first introduced, so the reader who is unfamiliar with the abbreviation has to constantly look back to find where it was first defined in order to know what the author is talking about.

Reading the book one is unfortunately left with the impression that it is a book written by an academic with little or no practical experience of real on-site bridge construction. This may be inaccurate, but it is certainly the impression that is given. Nothing is said in the flyleaf about the author, and it would add credibility to the arguments if the author's credentials were spelt out.

Ian Firth FREng, BSc, MSc, DIC, CEng, FIStructE, FICE, FConsE
Ian Firth is Chief Operating Officer at consulting civil and structural engineers Flint & Neill. His areas of expertise are in the design, analysis and assessment of steel and concrete structures, particularly in relation to major bridges and special structures, and the application of new materials. He directs engineering projects, both large and small, around the world, and provides specialist advice on long-span bridge design, construction and maintenance. He also directs the engineering design and assessment of complex building structures and other projects.