Book review

Bridge Construction Equipment

Marco Rosignoli. ICE Publishing, London, UK, 2013, ISBN 978-0-7277-5808-8, **£80.00 (hardback), 488 pp.**

Often underestimated by bridge designers, the cost of modern bridges of moderate- and long-spans is heavily influenced by the construction method and associated construction equipment.

This book covers comprehensively the different type of equipment and construction methods available for mid- and long-span bridges, from beam launchers for short span to different types of travelling forms for cable stayed bridges. Each section is very descriptive and detailed, providing good advice, including the advantages and disadvantages of each type of construction method.

The book has three different sections. Chapters 2 to 8 cover the different equipment available for each construction method. Chapters 9 and 10 cover the analysis and design of equipment and their effects in the permanent works, and chapters 11 and 12 cover more contractual matters such as procurement and forensics.

After a short introduction, chapter 2 covers briefly the equipment used to erect precast beams when cranes are not feasible, which is common in short- and mid-span concrete bridges.

Chapter 3 describes the methods and equipment used for self-launching gantries for segmental span-by-span erection. The main elements of segmental fabrication (both short- and long-line match casting), handling and transportation are also covered.

Chapter 4 covers a less conventional type of precast segment defined as 'macro-segmental' in which segment weights are much higher than conventional span-by-span or balanced cantilever segments.

In situ span-by-span equipment is described in chapter 5, and the next chapter covers another type of cast in situ construction that applies to either

concrete or steel bridges when the full deck slab or part of it is cast in a second stage, although this chapter is more orientated to steel-concrete composite bridges.

Chapter 7 covers the balanced cantilever construction of concrete bridges dealing with both segmental construction and in situ construction methods and the different alternatives of equipment available.

Finally, in chapter 8, a variation of the type of construction described in chapter 2 is covered, which is single-beam precast span construction, which leads to heavy single-beam precast beam decks that have significant applications in railway bridges.

In all sections, kinematics of the equipment, launch and lock systems and permanent structure-equipment interaction are described in detail and usual performance and production rates are provided. Also, the competitive span range and type of bridge (road, railway) that is more common for each method is provided in each chapter.

The second section, which includes chapters 9 and 10 covers the recommended loads, combinations, analysis and design commonly used for this type of equipment. Although the book is not bound to any specific code, it relies on American Association of State Highway and Transportation Officials (Aashto), Eurocodes and European Federation of Materials Handling (FEM) recommendations.

Finally, the last two chapters provide guidance on the procurement, specification and commissioning of the equipment in chapter 11, and a last chapter covers some case studies of failures and forensics.

In summary, the book is an excellent, detailed and comprehensive guide of mid- and long-span concrete bridge construction methods and the equipment required. It is very strongly recommended to bridge designers, contractors and other professionals involved in the design and construction of major concrete bridges.

Marcos Sanchez