Book review

Bridge Engineering Handbook, 2nd Edition – Substructure Design

W.-F. Chen and L. Duan (eds). CRC Press (Taylor & Francis Group), Boca Raton, FL, USA, 2014, ISBN 9781439852194, £63.99, 386 pp.

This second edition publication forms part of an update of a comprehensive five-volume edition encompassing all the critical aspects of bridge design, construction and maintenance. It has been extended in its range and brought up to date since the original edition in 2000. This *Substructure Design* volume covers topics from bearings down to deep foundations, and includes scour and ground investigation in the 11 chapters. The editors Chen (a research professor) and Duan (a practising bridge engineer) are based in the USA and have brought together 17 contributors for this volume, most of whom are in practice in the USA, to provide a 386-page reference book giving solid guidance to students and practitioners through descriptions, worked examples with formulae, as well as black and white illustrations and photographs for a very wide selection of bridge substructure forms. Needless to say, with the US origins of this volume, the code references and examples are based on the American Association of State Highway and Transportation Officials

(Aashto) requirements, with US units of loads and dimensions; also, most of the extensive references are from US documents.

Guidance is given throughout on the selection of the various types of substructure. The sections on piers, columns and towers include information on various types of bearings for different purposes; this is vital to forming the complete picture of force and movement effects and control for foundations, but is so often omitted from similar reference books. Vessel collision guidance is given for supports in navigable waterways – a specialist aspect owing to considerations of vulnerability, special loads and protection measures. Continuing the theme of hydraulic influences, there is also a chapter devoted to scour and its analysis, protection and inspection. Abutments and earth-retaining elements are both given their own separate chapters, including seismic effects, landslip analysis and associated protection. Both shallow and deep foundations are described separately and in detail, together with a well-explained chapter on ground investigation methods, tests and reporting.

Overall, this book would be a useful reference volume for any design or construction organisation, but particularly in organisations working to US codes.

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