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## Book Review

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## Book review

### Civil Engineering Structures according to the Eurocodes: Inspection and Maintenance

Xavier Lauzin. ISTE Ltd, London, UK, 2017, ISBN 978-1-78630-186-4, £113.00, 323 pp.

This book is from ISTE's Civil Engineering and Geomechanics Series, which currently lists over 70 titles dating back to 2005. This one, like many in the series, is translated from French, and so it refers mainly to French technical authorities and guidance (e.g. Cerema for bridges, Codres for oil-storage facilities and Cetmef for maritime structures). Notwithstanding that, the book's introduction cites the BS EN 1990 durability requirements for civil engineering structures and states that its purpose is to summarise the methodologies used for their inspection and to present the processes that provide the basis for their diagnosis and maintenance. Much of the information it contains can therefore be considered universal.

The book is divided into five chapters (inspection methodologies, resistance of reinforced concrete, pathology of structures, repair techniques and inspection methodologies in the USA) and contains six appendices. It focuses on, but is not exclusive to, reinforced concrete structures.

Chapter 1 covers inspection methodologies for bridges, water-retaining structures, oil industry storage facilities, maritime structures, silos and gantries/masts. Within each of these subsections, there are handy 'points to look out for' tables. Chapter 2 contains much information on the chemical composition and mechanical properties of both concrete and rebar steel and provides first-principle theories relating to beam compression, tension, bending, shear and torsion. Chapter 3 covers concrete cracking and degradation in considerable depth, masonry defects and failure mechanisms of composites – that is, fibre-reinforced resin

pultrusions and fabrics. Chapter 4 firstly considers the repair of reinforced concrete structures by glued metal plates and composites but also considers additional prestressing, shotcreting and conventional patching to EN 1504 Parts 1–10. It also covers cathodic protection and underpinning/remediation piling. Chapter 5, as its title suggests, summarises the differences in the US approach to inspections.

The very useful appendices 1–4 provide either exemplar or template inspection reports for a potable-water-storage structure, a petroleum-product-storage tank, a marine structure, gantries/masts and so on. Appendix 5 lists typical measuring equipment, and appendix 6 tabulates the requirements for each of the typical bridge inspections.

While some terms, phrases and cited organisations within this book may be unfamiliar to UK engineers, it is noted that it has a clear, concise and simple format. More importantly, there is a universal desire to extract as much useful life as possible from existing civil engineering infrastructure in order to continue operations, to limit capital expenditure and to conserve energy. Those civil engineers who practise or intend to practise in Europe; those outside Europe who need a counterpoint to established national/regional inspection and maintenance practice; those whose main occupation, irrespective of nationality, is to manage existing infrastructure; and those consultants who wish to ensure that their inspection and maintenance processes represent best practice in accordance with the Eurocodes will find this book a useful reference.

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