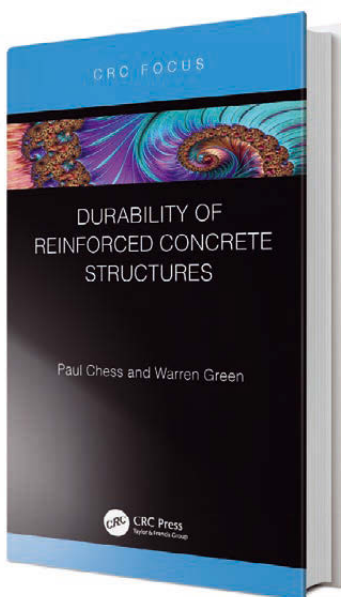


Review

This concise book provides useful information and valuable guidelines for engineers looking to extend the service life of concrete structures, concludes **Long-yuan Li**.

Durability of reinforced concrete structures

Authors: Paul Chess and Warren Green
Publisher: CRC Press
Price: £50 (hardback); £15.30 (e-book)
ISBN: 978-0-367-27838-0



CHLORIDE-INDUCED CORROSION of reinforcing steel is one of the most important durability problems for reinforced concrete structures. The reinforcement corrosion not only reduces the strength of steel bars, but also leads to cracking, spalling and delamination of concrete cover, which can in turn accelerate the deterioration of steel corrosion.

This book looks at the mechanisms for corrosion induced by chlorides and how corrosion engineering can be used to minimise these problems in future projects. It also discusses the effectiveness of corrosion monitoring techniques and questions why the reality is at odds with current theory and standards. Finally, it provides several real-world examples in which reinforced concrete structures with corrosion problems are described and various life-enhancement solutions that were considered and applied are discussed.

The book contains seven chapters. The first two chapters briefly introduce the general problem of reinforced concrete structures and describe the corrosion process of reinforcing steel induced by chlorides occurring in concrete structures.

Chapter 3 reviews various techniques currently used for detecting and monitoring reinforcing steel corrosion in concrete structures. Chapter 4 discusses the design issues in order to achieve a specified design life by using different life-enhancement techniques.

Chapter 5 describes the optimal maintenance strategies to maximise structural service life with minimal expenditure. Chapter 6 discusses the pros and cons of different remediation procedures when they are applied to a structure at different stages.

The last chapter of the book provides seven case studies in which concrete structures had suffered from reinforcement corrosion and were treated using different repair methods. In addition, a subject index is also provided at the end of the book.

The book was written by two experienced practising engineers who are actively working in the field of corrosion remediation of concrete structures. Unlike other durability

books, this book focuses more on the practical concerns of reinforcing steel corrosion problems in concrete structures and addresses the issues related to the design, monitoring, maintenance and treatment in order to protect reinforcing steel from corrosion.

Although the book is condensed and succinct (137 pages), it provides very useful information and valuable guidelines for the enhancement of the service life of concrete structures. The book will serve as an excellent reference work for structural designers, specialist contractors, consultants and

owners of corrosion-damaged structures. It will also be a valuable reference for civil engineering students at postgraduate level.

“
UNLIKE OTHER DURABILITY BOOKS, THIS BOOK FOCUSES MORE ON THE PRACTICAL CONCERNS OF REINFORCING STEEL CORROSION PROBLEMS IN CONCRETE STRUCTURES”

Long-yuan Li

BEng, MSc, PhD, CEng, FIStructE

Long-yuan Li is Professor of Structural Engineering at the University of Plymouth. His research interests are mainly related to concrete materials, including the durability of reinforced concrete structures, geopolymers concrete, and fire safety of concrete structures.

The Drawing Board TheStructuralEngineer

Enter a sketch in the next competition – deadline 4 January 2021

The Drawing Board is *The Structural Engineer's* quarterly sketching competition, judged by Ron Slade FIStructE of WSP.

Sketches must be:

- hand drawn (no CAD, except for 'guided freehand')
- from a real project or assignment
- at a suitable scale for publication (i.e. not too intricate/detailed).

Please also submit a short description (150 words) to put the sketch into context.

To take part, submit your entries to: tse@istructe.org

Each published entry will receive a free single e-book from the Institution's current list of titles.

Background sketch by Kevin Lyons (Lyons O'Neill)