

Book review

Concrete Durability

T. Dyer. CRC Press, Boca Raton, 2014, ISBN 978-0-415-56475-5 (hardback), £60.00, 431 pp.

Concrete Durability by Thomas Dyer is a must-have guide for all professionals working in a concrete-related field. The durability of concrete has become a key issue for civil engineers as there is an increasing demand for concrete structures to be maintenance free and have a long service life. Furthermore, much concrete infrastructure is expected to remain durable beyond its intended lifespan. Therefore, the importance of concrete durability is of more concern than it ever has been before and durability has many economic and environmental consequences. This book provides an explanation of how several of the main mechanisms of concrete deterioration occur. The design of concrete to resist these mechanisms, methods to identify deterioration and repair techniques are also considered.

A wide range of physical and chemical mechanisms of concrete degradation is considered including shrinkage, thermal cracking and sulfate attack. In particular, discussion of the mechanism of acid attack is interesting, wherein factors influencing the rate of acid attack and the action of specific acids are considered. Potential methods that may be used to increase the acid resistance of concrete are also discussed.

The corrosion of steel reinforcement in concrete is also evaluated. The author aims to examine the process of corrosion, establishes the main mechanisms that cause the steel in concrete to corrode and suggests possible methods to protect steel in concrete from corrosion. This format

offers the reader an explanation of the problem, along with possible methods to achieve increased protection for steel reinforcement in concrete.

Another aspect considered in this book is the specification and design of durable concrete and the construction of durable concrete structures. In these chapters, the various constituents of concrete are considered as well as the concrete mix design for concrete under different exposure conditions. As is often the case throughout the book, the standards and guidance are considered, which gives the reader useful information on the approaches taken by the relevant standards. This means the book should remain useful and relevant for many years to come.

The last chapter of the book reflects on the serviceability, repair and maintenance of concrete structures. The author describes some of the in situ tests that can be carried out to assess the condition of concrete. These include the measurement of concrete cover, surface absorption and resistivity. Various laboratory tests that can be carried out to assess the durability of concrete are also considered. The author also discusses various repair methods that can be used to ensure that effective repairs can be carried out.

Concrete Durability is an excellent reference and guide for those involved in concrete in any way, including researchers, engineers, consultants and graduates. Overall, this is a great book written in a coherent and logical format; it offers a substantial review of the subject, exploring many of the wide-ranging issues that are related to the durability of concrete.

Timothy Aiken