

Book reviews

Corrosion of steel in concrete

Editor: P. Schiessel

Chapman & Hall, London, 1988. 234 mm × 156 mm. 112 pp. Typescript, illustrated, hardback. ISBN 0 412 32100 9. £20.00.

At first sight this is an edited compilation of camera-ready articles by several of the better-known research workers in the field. However, the presentation of the book belies the care and effort that has gone into co-ordinating the various chapters. Following an introduction by the editor, there is a chapter by Page on the principles of corrosion, with particular reference to steel in concrete. The coverage is somewhat uneven (e.g. the Nernst equation is given, whereas the Butler-Volmer equation is not) and it would perhaps have been more logical to present the Evans diagram before the polarization curve, but these are minor defects in a sound presentation.

Chapter 3, by Bakker, is concerned with the initiation of corrosion. This includes a useful introduction to the physico-chemical properties of concrete, leading on to detailed consideration of carbonation and the penetration of chloride into the concrete.

In chapter 4 Treadaway discusses the corrosion period, which commences when the carbonation and/or chloride diffusion front reaches the reinforcing steel. This presents a sound discussion of the various corrosion processes which can occur and the processes which are liable to be rate-limiting.

Chapter 5 by Schiessel and Bakker has the slightly ambiguous title 'Measures of protection'. In fact it is concerned with *methods* of protection of steel against corrosion and covers both the factors associated with the fabrication of the concrete and additional protective

treatments such as corrosion inhibitor additions, rebar coating and cathodic protection.

Monitoring techniques are discussed in chapter 6 by Andrade. While there is some reference to non-electrochemical techniques, this chapter concentrates on electrochemical methods, including a brief discussion of the more advanced techniques such as AC impedance and electrochemical noise measurement.

The book is concluded by a brief but useful section by Treadaway on future work.

This book provides an excellent concise review of the current state of knowledge of the corrosion of reinforcing steel in concrete. I have only two criticisms of significance. The first of these is rather serious: the title of the book is inaccurate, as the corrosion of prestressing steel is quite deliberately excluded from consideration. This has important consequences, in that there is no discussion of hydrogen embrittlement effects, even in the section concerned with the use of cathodic protection to control corrosion. This problem is compounded by the very limited warning given about the omission. The second problem is of less consequence, but in these days of desk-top publishing the use of typescript makes the book unnecessarily difficult to read and gives an unduly poor impression of the content.

R. A. COTTIS

Lecturer, Corrosion and Protection Centre,
University of Manchester Institute of Science and Technology

Condensed silica fume in concrete

Fédération Internationale de la Précontrainte

Thomas Telford, London, 1988. 297 mm × 210 mm. 44 pp. Illustrated, paperback. ISBN 0 7277 1373 6. £22.00.

This report presents the results of an extensive literature review, reference being made to over 200 published papers and reports. It is based on a paper originally prepared by Erik Sellevold (the main author of the report) and Terje Nilson for presentation at the

CANMET international workshop on CSF in concrete in 1987. The report is in ten chapters, with several case studies distributed throughout, but independent of the main text.

The introduction (chapter 1) gives a general descrip-