

Book Reviews

***Prestressed Concrete: A Fundamental Approach*, E.G. Nawy, Prentice-Hall International Series in Civil Engineering and Engineering Mechanics, 2000. 938p. ISBN 0130205931, Hbk 68 approx.**

This is the third edition of a well-known textbook covering, as its name suggests, the fundamentals of prestressed concrete, but in a rather extensive way. Although it has 13 chapters, its content can conveniently be divided into two main parts: theory and applications.

The former, presented in the first 8 chapters, covers standard topics including 'Basic Concepts', 'Materials and Systems for Prestressing', 'Partial Loss of Prestress', 'Flexural Design of Prestressed Concrete Elements', 'Shear and Torsional Strength Design', 'Indeterminate Prestressed Concrete Structures', 'Camber, Deflection and Crack Control' and 'Prestressed Compression and Tension Members'. Although these can be found in other textbooks on prestressed concrete, they reflect the provision of the new ACI 318-99 Building Code making the textbook relevant and its publication very timely.

The applications part, comprising the remaining 5 chapters, is quite refreshing for a textbook written with the aim of describing the fundamentals of prestressed concrete. The topics covered are 'Two-way Prestressed Concrete Floor Systems', 'Connections for Prestressed Concrete Elements', 'Prestressed Concrete Circular Storage Tanks and Steel Roofs', 'LFRD and Standard AASHTO Design of Concrete Bridges' and, finally, 'Seismic Design of Prestressed Concrete Structures'. The sections covering storage tanks, steel roofs and seismic design are quite unique, and it should be mentioned that it is unusual to find such an extensive coverage of bridge design in a textbook devoted to prestressed concrete.

The textbook is clearly written for the North American market, but excellent and consistently presented graphics, which include numerous construction details, could clearly be useful to anybody dealing with practical design. However, it should be noticed here that the textbook only describes behaviour and performance of prestressed concrete structures. Despite many calculation flowcharts given, it basically does not tackle the conceptual design of prestressed concrete structures, which remains a very important and not particularly

well-covered topic in so many similar textbooks written in English throughout the world. Also, the practical construction process of prestressed concrete structures, so important for their behaviour and design, is only touched on. Finally, it is interesting to note that, although the textbook covers serviceability (camber, deflection and crack control), two-way floors, bridges and seismic performance of prestressed concrete structures, it generally ignores the existence of the vibration serviceability limit state, which is nowadays recognised in basically all codes of practice based on limit state design principles applicable to concrete structures.

Regarding the well-known problem of 'compatibility' between the Imperial units extensively used in the USA and the SI units, an attempt is made to present calculation formulas and produce calculation examples in both Imperial and SI units. Therefore, the textbook will be useful for the teaching of undergraduate and post-graduate students in countries where SI units are used. However, the problem remains of examples (even when given in SI units) covering only codes of practice used in the USA and which utilise appropriate terminology and notation, for teaching in, say, Europe.

References given after each chapter are extensive and well selected. Other resources include a listing of a Q-BASIC program (unfortunately, not given on a floppy disc or a CD within the textbook) for estimation of time-dependent losses in concrete beams. No website is given to support materials given in the textbook, which may impair its usability in Western universities which more and more depend on the Internet and web delivery of some parts of teaching. Numerous well-presented tables are given in the appendices of the textbook and these contain information on all relevant details of the prestressing equipment, standard double-tee and bridge pre-cast cross-sections, equivalent loading, etc.

The textbook would be most useful to practising engineers or post-graduate research students, well versed with the general philosophy of design codes. As the textbook is so heavily based on the existing code of practice, undergraduate taught students who buy it now are likely to struggle with distinguishing between the information which describe the general behaviour of prestressed concrete structures and is universally applicable, and the information which is pertinent to the code of practice used. In any case, they will definitely have an