PRESTRESSED CONCRETE ANALYSIS AND DESIGN: FUNDAMENTALS

Third Edition, 2012

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Prestressed concrete is one of the most reliable, durable, and widely used construction materials in building and bridge projects around the world. It has made significant contributions to the construction industry, the precast manufacturing industry, and the cement industry as a whole. It has led to an enormous array of structural applications, including buildings, bridges, nuclear power vessels, TV towers, and offshore drilling platforms.

Main Features:
This book was written to serve as a thorough teaching text, a comprehensive source of information, and a basic reference. It is intended for advanced students, professional engineers, and researchers. It emphasizes the fundamental concepts of analysis and design of prestressed concrete structures, providing the user with the essential knowledge and tools to deal with everyday design problems, while encouraging the necessary critical thinking to tackle more complex problems with confidence.

This updated edition

- Integrates the provisions of the 2011 ACI Building Code in text and examples
- Offers an extensive treatment of bridge analysis and design according to the 2010 AASHTO LRFD Specifications
- Offers a rigorous treatment of fundamentals as applied to serviceability and ultimate strength limit states for bending, shear, composite action, compression and tension members, and introduces some simple optimum design approaches
- Includes a large number of logical design flow charts and design examples
- Covers the basics and provides examples of applications comparing both the 2011 ACI and 2010 AASHTO LRFD code approaches to bending, shear and torsion, prestress losses, and interface shear
- Presents a chapter on strut-and-tie modeling according to the ACI Building Code with examples of anchorage zone design
- Covers slenderness effects in prestressed concrete columns, and provides load-moment interaction diagrams for prestressed columns and poles
- Offers a comprehensive treatment of the design of one- and two-way prestressed slabs
- Presents a unique treatment of prestressed tensile members by optimum design, including the design of wall for circular tanks
- Covers the time-step procedure to compute prestress losses and long-term deflections
- Offers a rigorous treatment of prestressed continuous beams
- Presents a comprehensive treatment of prestressed composite beams

- Contains more than four hundreds illustrations and photographs
- Covers sufficient material for a two-semester course on the subject
- Contains a large number of examples, an extensive updated bibliography, and an appendix with answers to study problems
- Uses consistent notation and consistent sign convention
- Uses dual units (US and SI) throughout for key equations and reference data

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