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2.13 Models for Predicting Shrinkage and Creep of Concrete 2.13.1 ACI 209R-92 Model; 2.13.2 B3 Model; 2.13.4 CEB 90 Model; 2.13.5 CEB MC 90-99 Model; 2.13.6 fib MC 2010 Model; 2.13.7 The AASHTO Model; 2.14 Unit Weight of Concrete; 2.15 Fire Resistance; 2.16 High-Performance Concrete; 2.17 Lightweight Concrete; 2.18 Fibrous Concrete; 2.19 Steel Reinforcement; 2.19.1 Types of Steel Reinforcement; 2.19.2 Grades and Strength; 2.19.3 Stress-Strain Curves; Summary; References; Problems; Chapter 3 Flexural Analysis of Reinforced Concrete Beams; 3.1 Introduction; 3.2 Assumptions 3.3 Behavior of Simply Supported Reinforced Concrete Beam Loaded to Failure 3.4 Types of Flexural Failure and Strain Limits; 3.4.1 Flexural Failure; 3.4.2 Strain Limits for Tension and Tension-Controlled Sections; 3.5 Load Factors; 3.6 Strength Reduction Factor ; 3.7 Significance of Analysis and Design Expressions; 3.8 Equivalent Compressive Stress Distribution; 3.9 Singly Reinforced Rectangular Section in Bending; 3.9.1 Balanced Section; 3.9.2 Upper Limit of Steel Percentage; 3.10 Lower Limit or Minimum Percentage of Steel; 3.11 Adequacy of Sections; 3.12 Bundled Bars 3.13 Sections in the Transition Region (< 0.9) 3.14 Rectangular Sections with Compression Reinforcement; 3.14.1 When Compression Steel Yields; 3.14.2 When Compression Steel Does Not Yield; 3.15 Analysis of T- and I-Sections; 3.15.1 Description; 3.15.2 Effective Width; 3.15.3 T-Sections Behaving as Rectangular Sections; 3.16 Dimensions of Isolated T-Shaped Sections; 3.17 Inverted L-Shaped Sections; 3.18 Sections of Other Shapes; 3.19 Analysis of Sections Using Tables; 3.20 Additional Examples; 3.21 Examples Using SI Units; Summary; References; Problems Chapter 4 Flexural Design of Reinforced Concrete Beams

Sommario/riassunto

"Text on concrete structural design and analysis. Newly updated to reflect the latest ACI 318-14 code, this edition emphasizes a conceptual understanding of the subject, and builds the student's body of knowledge by presenting design methods alongside relevant standards and code"--