

1. Record Nr.	UNINA9910141599203321
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Titolo	Reinforced concrete beams, columns and frames [[electronic resource] ] : section and slender member analysis // Jostein Hellesland ... [et al.]
Pubbl/distr/stampa	London, : ISTE Hoboken, N.J., : Wiley, 2013
ISBN	1-118-63536-1 1-299-24230-8 1-118-63540-X
Descrizione fisica	1 online resource (322 p.)
Collana	Civil engineering and geomechanics series
Altri autori (Persone)	HelleslandJostein
Disciplina	624.1 624.1821 624.18341
Soggetti	Reinforced concrete construction Structural engineering Concrete - Technological innovations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Title Page; Contents; Preface; Chapter 1. Advanced Design at Ultimate Limit State (ULS); 1.1. Design at ULS - simplified analysis; 1.1.1. Simplified rectangular behavior - rectangular cross-section; 1.1.2. Simplified rectangular behavior - T-cross-section; 1.1.3. Comparison of design between serviceability limit state and ultimate limit state; 1.1.4. Biaxial bending of a rectangular cross-section; 1.2. ULS - extended analysis; 1.2.1. Bilinear constitutive law for concrete - rectangular cross-section; 1.2.2. Parabola-rectangle constitutive law for concrete - rectangular cross-section 1.2.3. T-cross-section - general resolution for bilinear or parabola-rectangle laws for concrete 1.2.4. T-cross-section - general equations for composed bending with normal forces; 1.3. ULS - interaction diagram; 1.3.1. Theoretical formulation of the interaction diagram; 1.3.2. Approximation formulations; 1.3.3. Graphical results for general cross-sections; Chapter 2. Slender Compression Members - Mechanics and Design; 2.1. Introduction; 2.2. Analysis methods; 2.2.1. General;

2.2.2. Requirements to second-order analysis; 2.3. Member and system instability  
2.3.1. Elastic critical load and effective (buckling) length  
2.3.2. System instability principles; 2.3.3. Concrete column instability - limit load;  
2.4. First- and second-order load effects; 2.4.1. Global and local second-order effects; 2.4.2. Single members; 2.4.3. Frame mechanics - braced and bracing columns; 2.4.4. Moment equilibrium at joints; 2.5. Maximum moment formation; 2.5.1. Maximum first- and second-order moment at the same section; 2.5.2. Maximum first- and second-order moment at different sections; 2.5.3. Curvature-based maximum moment expression  
2.5.4. Unbraced frame application example  
2.6. Local and global slenderness limits; 2.6.1. Local, lower slenderness limits - general; 2.6.2. EC2 - local lower slenderness limits; 2.6.3. NS-EC2 - Local lower slenderness limits; 2.6.4. Comparison of the EC2 and NS-EC2 limits; 2.6.5. Local upper slenderness limit; 2.6.6. Global lower slenderness limit; 2.7. Effect of creep deformations; 2.7.1. General; 2.7.2. Effects on load and deformation capacity; 2.7.3. Approximate calculation of creep effects; 2.8. Geometric imperfections; 2.8.1. Imperfection inclination  
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2.8.3. Stiffened and isolated structural elements; 2.9. Elastic analysis methods; 2.9.1. Principles, equilibrium and compatibility; 2.9.2. Equilibrium and compatibility at multiple sections; 2.9.3. Optimization; 2.10. Practical linear elastic analysis; 2.10.1. Stiffness assumptions; 2.10.2. EC2 approach; 2.10.3. ACI 318 approach; 2.11. Simplified analysis and design methods; 2.11.1. General; 2.11.2. Simplified second-order analysis; 2.11.3. Method based on nominal stiffness; 2.11.4. Method based on nominal curvature; 2.12. ULS design  
2.12.1. Simplified design methods

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## Sommario/riassunto

This book is focused on the theoretical and practical design of reinforced concrete beams, columns and frame structures. It is based on an analytical approach of designing normal reinforced concrete structural elements that are compatible with most international design rules, including for instance the European design rules - Eurocode 2 - for reinforced concrete structures. The book tries to distinguish between what belongs to the structural design philosophy of such structural elements (related to strength of materials arguments) and what belongs to the design rule aspects associated with

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