1. Record Nr. UNINA9910827393503321

Autore	Johnson R. P (Roger Paul)
Titolo	Composite structures of steel and concrete : beams, slabs, columns, and frames for buildings / / R.P. Johnson
Pubbl/distr/stampa	Malden, MA, : Blackwell Pub., c2004
ISBN	1-281-30838-2 9786611308384 0-470-79362-7 0-470-77462-2 1-4051-6839-0
Edizione	[3rd ed.]
Descrizione fisica	1 online resource (250 p.)
Disciplina	624.1/821
Soggetti	Composite construction Building, Iron and steel Concrete construction
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	Contents; Preface; Symbols, terminology and units; Chapter 1 Introduction; 1.1 Composite beams and slabs; 1.2 Composite columns and frames; 1.3 Design philosophy and the Eurocodes; 1.3.1 Background; 1.3.2 Limit state design philosophy; Basis of design, and actions; Resistances; Combinations of actions; Comments on limit state design philosophy; 1.4 Properties of materials; 1.5 Direct actions (loading); 1.6 Methods of analysis and design; Chapter 2 Shear connection; 2.1 Introduction; 2.2 Simply-supported beam of rectangular cross-section; 2.2.1 No shear connection; 2.2.2 Full interaction 2.3 Uplift2.4 Methods of shear connection; 2.4.1 Bond; 2.4.2 Shear connectors; 2.4.3 Shear connection for profiled steel sheeting; 2.5 Properties of shear connectors; 2.5.1 Stud connectors used with profiled steel sheeting; 2.6 Partial interaction; 2.7 Effect of slip on stresses and deflections; 2.8 Longitudinal shear in composite slabs; 2.8.1 The m-k or shear-bond test; Chapter 3 Simply-supported composite slabs and beams; 3.1 Introduction; 3.2 Example: layout,

materials and loadings; 3.3 Composite floor slabs; 3.3.1 Resistance of composite slabs to sagging bending
3.3.2 Resistance of composite slabs to longitudinal shear3.3.3 Resistance of composite slabs to vertical shear; 3.3.4 Punching shear; 3.3.5 Bending moments from concentrated point and line loads; 3.3.6 Serviceability limit states for composite slabs; 3.3.7 Fire resistance; Partial safety factors for fire; Design action effects for fire; Thermal properties of materials; Design methods for resistance to .re; Simple calculation model for unprotected composite slab; 3.4 Example: composite slab; 3.4.1 Profiled steel sheeting as shuttering; 3.4.2 Composite slab - flexure and vertical shear
3.4.3 Composite slab - longitudinal shear3.4.4 Local effects of point load; 3.4.5 Composite slab - serviceability; 3.4.6 Composite slab - fire design; 3.4.7 Comments on the design of the composite slab; 3.5 Composite beams - sagging bending and vertical shear; 3.5.1 Effective cross-section; 3.5.2 Classification of steel elements in compression; 3.5.3 Resistance to sagging bending; Cross-sections in Class 1 or 2; Cross-sections in Class 3 or 4; 3.5.4 Resistance to vertical shear; 3.6 Composite beams - longitudinal shear; 3.6.1 Critical lengths and cross-sections
3.6.2 Ductile and non-ductile connectors3.6.3 Transverse reinforcement; Design rules for transverse reinforcement in solid slabs; Transverse reinforcement in composite slabs; 3.6.4 Detailing rules; 3.7 Stresses, deflections and cracking in service; 3.7.1 Elastic analysis of composite sections in sagging bending; 3.7.2 The use of limiting span-to-depth; 3.8 Effects of shrinkage of concrete and of temperature; 3.9 Vibration of composite .oor structures; 3.9.1 Prediction of fundamental natural frequency; 3.9.2 Response of a composite floor to pedestrian traffic
3.10 Fire resistance of composite beams

Sommario/riassunto

This book sets out the basic principles of composite construction with reference to beams, slabs, columns and frames, and their applications to building structures. It deals with the problems likely to arise in the design of composite members in buildings, and relates basic theory to the design approach of Eurocodes 2, 3 and 4.The new edition is based for the first time on the finalised Eurocode for steel/concrete composite structures.