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*Design Guidelines for Precast Structures with Cladding Panels* **Design Guidelines for Wall Panel Connections** *Coated Metal Roofing and Cladding* **Exterior Wall Systems Cladding of Buildings** *Aspects of Building Design Management* **Cladding of Buildings Structural Engineering, Mechanics and Computation** **Modern Stone Cladding CONCRETE Innovations in Materials, Design and Structures** **The Seismic Design Handbook** *Anchorage Pullout Strength in Granite* *Designing Information Systems* **Profiled Sheet Roofing and Cladding Construction Materials, Methods and Techniques: Building for a Sustainable Future** **Understanding Building Failures Construction Materials, Methods and Techniques** **Modern Construction Handbook** **Precast Concrete Cladding NBS Building Science Series** Proceedings of Italian Concrete Days 2018 **Advances in Seismic Performance and Risk Estimation of Precast Concrete Buildings** **New Stone Technology, Design, and Construction for Exterior Wall Systems** Dimension Stone Use in Building Construction **Civil Engineering** *Recent Awards in Engineering* Current Perspectives and New Directions in Mechanics, Modelling and Design of Structural Systems **Earthquake Engineering** *Proceedings of Italian Concrete Days 2016* *Design of Structural Elements* **Using the Building Regulations Using the Building Regulations** *The Building Regulations* Prefabricated thin walled concrete units **Modern Construction Envelopes** Fundamentals of Building Construction Case Studies on Conservation and Seismic Strengthening/Retrofitting of Existing Structures **Fundamentals of Building Construction** **Designing the Exterior Wall** **Fracture and Failure of Natural Building Stones**

Building defects still continue to plague the construction industry. The lessons learned over the last forty years have not been fully applied. Many new or refurbished buildings still leak or crack. Lack of awareness by designers and installers as to the main mechanisms that trigger such failures remains a problem for the industry. Investigating and rectifying building failures form a major part of building surveyors' bread and butter work. This book provides guidance on this work for typical residential, commercial and industrial buildings – with advice on how to diagnose a wide range of defects with an emphasis on evidence based practice throughout. It considers both modern and older construction methods, together with new and traditional materials. The particular problems of alteration and renovation work are also discussed. The first four chapters provide information and guidance on the methodology for investigating failures – how to prepare for and conduct an investigation into a building defect and subsequently diagnose its cause in a logical manner. This fourth edition has been updated and expanded to cover the latest diagnostic procedures and research. It also includes Appendices and a new Bibliography, and provides an extensive list of books on building pathology and related topics in the UK and North America. It is essential reading for all students and practitioners interested in building surveying and building conservation. By presenting the basics of building science along with a prescribed set of details, *Designing the Exterior Wall* helps you understand why buildings fail and how they can be made more durable through design. Author Linda Brock connects the science and aesthetics of building envelopes through the examination of a variety of construction and cladding types. She features details from real world projects in a variety of climates, successful and unsuccessful case studies, and checklists you can use on your own projects. Helps you reduce your liability by showing why building envelopes fail and how they can be designed to endure. Moves from theory to actual construction by including hundreds of building envelope details from a broad array of projects and climates. Integrates numerous contemporary case studies, including Frank Gehry's Experiential Music Center in Seattle (thin skins), Renzo Piano's Rue de Meaux housing in Paris (terra cotta cladding), and Mario Botta's San Francisco Museum of Modern Art (prefabricated brick panels). *Designing the Exterior Wall* is a must-have book, whether you're an architect or a student. Order your copy today. This book gathers the best peer-reviewed papers presented at the Italian Concrete Days national conference, held in Lecco, Italy, on June 14-15, 2018. The conference topics encompass the aspects of design, execution, rehabilitation and control of concrete structures, with particular reference to theory and modeling, applications and realizations, materials and investigations, technology and construction techniques. The contributions amply demonstrate that today's structural concrete applications concern not only new constructions, but more and more rehabilitation, conservation, strengthening and seismic upgrading of existing premises, and that requirements cover new aspects within the frame of sustainability, including environmental friendliness, durability, adaptability and reuse of works and / or materials. As such the book represents an invaluable, up-to-the-minute tool, providing an essential overview of structural concrete, as well as all new materials with cementitious matrices. This Proceedings contains the papers of the fib Symposium "CONCRETE Innovations in Materials, Design and Structures", which was held in May 2019 in Kraków, Poland. This annual symposium was co-organised by the Cracow University of Technology. The topics covered include Analysis and Design, Sustainability, Durability, Structures, Materials, and Prefabrication. The fib, Fédération internationale du béton, is a not-for-profit association formed by 45 national member groups and approximately 1000 corporate and individual members. The fib's mission is to develop at an international level the study of scientific and practical matters capable of advancing the technical, economic, aesthetic and environmental performance of concrete construction. The fib, was formed in 1998 by the merger of the Euro-International Committee for Concrete (the CEB) and the International Federation for Prestressing (the FIP). These predecessor organizations existed independently since 1953 and 1952, respectively. Written by well-known specialists, this key, well-illustrated text addresses the topic of lightweight claddings in buildings and is a useful

guide and reference. This new edition incorporates the latest environmental issues and use of new materials. Following on from the International Conference on Structural Engineering, Mechanics and Computation, held in Cape Town in April 2001, this book contains the Proceedings, in two volumes. There are over 170 papers written by Authors from around 40 countries worldwide. The contributions include 6 Keynote Papers and 12 Special Invited Papers. In line with the aims of the SEMC 2001 International Conference, and as may be seen from the List of Contents, the papers cover a wide range of topics under a variety of themes. There is a healthy balance between papers of a theoretical nature, concerned with various aspects of structural mechanics and computational issues, and those of a more practical nature, addressing issues of design, safety and construction. As the contributions in these Proceedings show, new and more efficient methods of structural analysis and numerical computation are being explored all the time, while exciting structural materials such as glass have recently come onto the scene. Research interest in the repair and rehabilitation of existing infrastructure continues to grow, particularly in Europe and North America, while the challenges to protect human life and property against the effects of fire, earthquakes and other hazards are being addressed through the development of more appropriate design methods for buildings, bridges and other engineering structures. This volume provides a description of units, fibre reinforcement materials and technologies used to produce units with wall thicknesses from 5m to 40mm. The risk factors and long term effects are also described. For the past 10 to 15 years, significant emphasis has been placed on evaluation of the bending strength of stone panels used for thin veneer cladding. However, failures of stone cladding on buildings are more commonly due to problems with the anchor and/or anchorage design or installation than with the bending strength of the granite panel. Judging from the calculations submitted by engineers designing stone cladding systems, many designers of stone cladding panels and anchoring systems are unaware of the issues addressed in this paper. This guide, the third edition of the NFRCs guide to good practice, is an accessible and practical code of practice in the application, design and installation of profiled sheeting and wall and roof cladding. The UK has developed very cost-effective methods of erecting and cladding factory, warehouse and storage buildings. This book distills the knowledge of many of the leading experts in this area of construction with hands-on site experience. Profiled Sheet Roofing and Cladding, Third edition sets out principles whereby all necessary components can be successfully integrated to provide a weather-tight external envelope that meets all the required performance standards. The special requirements of insulated structures are also considered. It gives up-to-date advice and information which takes account of the exceptional requirements specified and the consequent developments which have occurred since the second edition was published in 1991. Written for all construction professionals concerned with getting the best value solution for their profiled sheet clad buildings, the guide aims to assist in increasing cooperation between the designer and contractor and to inform all members of the building team about the abilities and applications of products. This comprehensive text provides a thorough overview of sustainable methods for site, residential and commercial building construction, covering both traditional and contemporary materials, current industry standards and new and emerging technologies. Organized according to the Construction Specifications Institute (CSI) MasterFormat standards, the text follows a logical structure that charts the sequence of construction step-by-step from project inception to completion. Readers will find ample, up-to-date information on the latest industry advances and best practices, as well as relevant building codes, all within a dynamic, reader-friendly new design. This proven text can help your students gain a clear understanding of today's construction materials, methods and techniques, providing a critical foundation for career success. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. Modern Construction Envelopes deals with the facade and roof as an integral part of the building, allowing a holistic approach to the design of the building envelope and providing greater design freedom. The book is aimed at readers who want to extend their knowledge of wall and roof construction beyond the information given in the Modern Construction Handbook, using state-of-the-art construction principles of modern facade and roof systems. The third edition of this classic has been fully brought up to date; it contains new examples in all chapters and presents the projects in revised, new 3D drawings and in 27 AR applications that can be accessed free of charge via smartphone and tablet. In this volume scientists from different disciplines present their experience and their scientific work in progress. These concern the properties of a series of stones that have been used for the erection of some of the most important stone monuments of international cultural heritage and are also used today for substitution of missing parts or completion of damaged ones. It deals with the subject globally and contains unpublished research results. THE #1 REFERENCE ON BUILDING CONSTRUCTION—UPDATED FROM THE GROUND UP Edward Allen and Joseph Iano's Fundamentals of Building Construction has been the go-to reference for thousands of professionals and students of architecture, engineering, and construction technology for over thirty years. The materials and methods described in this new Seventh Edition have been thoroughly updated to reflect the latest advancements in the industry. Carefully selected and logically arranged topics—ranging from basic building methods to the principles of structure and enclosure—help readers gain a working knowledge of the field in an enjoyable, easy-to-understand manner. All major construction systems, including light wood frame, mass timber, masonry, steel frame, light gauge steel, and reinforced concrete construction, are addressed. Now in its Seventh Edition, Fundamentals of Building Construction contains substantial revisions and updates. New illustrations and photographs reflect the latest practices and developments in the industry. Revised chapters address exterior wall systems and high-performance buildings, an updated and comprehensive discussion of building enclosure science, evolving tools for assessing environmental and health impacts of building materials, and more. New and exciting developments in mass timber construction are also included. This Seventh Edition includes: 125 new or updated illustrations and photographs, as well as 40 new photorealistic renderings The latest in construction project delivery methods, construction scheduling, and trends in information technology affecting building design and construction Updated discussion of the latest LEED and Living Building Challenge sustainability standards along with expanded coverage of new methods for assessing the environmental impacts of materials and buildings Expanded coverage of mass timber materials, fire resistance of mass timber, and the design and construction of tall wood buildings Revised end-of-chapter sections, including references, websites, key terminology, review

questions, and exercises Fully-updated collection of best-in-class ancillary materials: PowerPoint lecture slides, Instructor's Manual, Test Bank, Interactive Exercises, and more Companion book, Exercises in Building Construction, available in print and eBook format For the nuts and bolts on building construction practices and materials, Fundamentals of Building Construction: Materials and Methods, 7th Edition lays the foundation that every architect and construction professional needs to build a successful career. Based on investigations across Europe and North America, this report addresses the key areas of interest to architects, engineers, manufacturers, installers and building owners. Recommendations are given on the specification of appropriate materials (including insurance and guarantee arrangements), design guidance, installation and maintenance and on the need for training of installers. Areas requiring further research and standardisation are also identified. This handbook contains up-to-date existing structures, computer applications, and information on planning, analysis, and design seismic design of wood structures. A new and very useful feature of this edition of earthquake-resistant building structures. Its intention is to provide engineers, architects, is the inclusion of a companion CD-ROM disc developers, and students of structural containing the complete digital version of the handbook itself and the following very engineering and architecture with authoritative, yet practical, design information. It represents important publications: an attempt to bridge the persisting gap between 1. UBC-IBC (1997-2000) Structural advances in the theories and concepts of Comparisons and Cross References, ICBO, earthquake-resistant design and their 2000. implementation in seismic design practice. 2. NEHRP Guidelines for the Seismic The distinguished panel of contributors is Rehabilitation of Buildings, FEMA-273, Federal Emergency Management Agency, composed of 22 experts from industry and universities, recognized for their knowledge and 1997. extensive practical experience in their fields. 3. NEHRP Commentary on the Guidelines for They have aimed to present clearly and the Seismic Rehabilitation of Buildings, FEMA-274, Federal Emergency concisely the basic principles and procedures pertinent to each subject and to illustrate with Management Agency, 1997. practical examples the application of these 4. NEHRP Recommended Provisions for principles and procedures in seismic design Seismic Regulations for New Buildings and practice. Where applicable, the provisions of Older Structures, Part 1 - Provisions, various seismic design standards such as FEMA-302, Federal Emergency 2000, UBC-97, FEMA-273/274 and ATC-40 Management Agency, 1997. As the Building Regulations and Approved Documents have become more and more complex, they have become increasingly unfriendly for a professional user. Compliance is only possible by understanding a wide range of supporting documentation. Alternative approaches are implied, but not described or analysed. This book examines Approved Document C on Site Preparation and takes the user through all the key stages of preparation, compliance, inspection and enforcement. It offers practical advice on using not just the traditional routes to compliance but also on the alternative approaches suggested but not explained in the Approved Documents. The advantages and disadvantages of each form of compliance are analysed in depth. Everything you need to know to prepare a site's fixtures against contamination and moisture is discussed, including floors, walls, window frames, door thresholds, and roofs. This is an indispensable text for professional designers, architects, structural and other specialist engineers, building control officers and students in construction, building and architecture. This text details the proceedings of the 11th European Conference on Earthquake Engineering. CD-ROM contains full text of the 650 papers in printed form. This would have been 6 volumes of 1000 pages each. Topics covered: are: Engineering seismology; Experimental aspects for soils, rocks and construction material; Computational aspects for materials, structures and soil-structure interaction; Civil engineering projects; Active and passive isolation; Industrial facilities, lifelines and equipment; Vulnerability, seismic risk and strengthening; Site effects and spatial variability of seismic motions; Reliability analyses and probabilistic aspects; Design criteria, codes and standards; Eurocode 8 and national applications; Seismic risk in the Mediterranean basin; Post earthquake investigations; First Published in 2007. Routledge is an imprint of Taylor & Francis, an informa company. Designing Information Systems focuses on the processes, methodologies, and approaches involved in designing information systems. The book first describes systems, management and control, and how to design information systems. Discussions focus on documents produced from the functional construction function, users, operators, analysts, programmers and others, process management and control, levels of management, open systems, design of management information systems, and business system description, partitioning, and leveling. The text then takes a look at functional specification and functional analysis, procedures and rules, and data modeling and data analysis. Concerns cover charting conventions and data modeling concepts, domains and domain integrity, deciding the most appropriate design solutions, and presentation of solutions to the user community. The manuscript examines implementation, user participation, aspects of human-computer interaction, project management, and system evaluation. Topics include appraisal of the simple approach, system evaluation with multiple purposes, data flows, data analysis and the data model, approaches to user involvement, and post-implementation evaluation and audit. The text is a valuable source of data for computer programmers and researchers wanting to explore how information systems are designed. Since publication of the first edition in 1976, The Building Regulations: Explained and Illustrated has provided a detailed, authoritative, highly illustrated and accessible guide to the regulations that must be adhered to when constructing, altering or extending a building in England and Wales. This latest edition has been fully revised throughout. Much of the content has been completely rewritten to cover the substantial changes to the Regulations since publication of the 13th edition, to ensure it continues to provide the detailed guidance needed by all those concerned with building work, including architects, building control officers, Approved Inspectors, Competent Persons, building surveyors, engineers, contractors and students in the relevant disciplines. First Published in 1998. Routledge is an imprint of Taylor & Francis, an informa company. This book gathers the best peer-reviewed papers presented at the Italian Concrete Days national conference, held in Rome, Italy, on October 27-28, 2016. The conference topics encompass the aspects of design, execution, rehabilitation and control of concrete structures, with particular reference to theory and modeling, applications and realizations, materials and investigations, technology and construction techniques. The contributions amply demonstrate that today's structural concrete applications concern not only new constructions, but more and more rehabilitation, conservation, strengthening and seismic upgrading of existing premises, and that requirements cover new aspects within the frame of

sustainability, including environmental friendliness, durability, adaptability and reuse of works and / or materials. As such the book represents an invaluable, up-to-the-minute tool, providing an essential overview of structural concrete, as well as all new materials with cementitious matrices. Explore the most up-to-date green and sustainable methods for residential and commercial building construction as well as the latest materials, standards, and practices with **CONSTRUCTION MATERIALS, METHODS AND TECHNIQUES: BUILDING FOR A SUSTAINABLE FUTURE, 4E**. This comprehensive book's logical, well-structured format follows the natural sequence of a construction project. The book is the only one with an organization based on the Construction Specifications Institute (CSI) Masterformat standards. Readers will find the most current industry developments and standards as well as latest relevant building codes within a dynamic new design. This edition emphasizes coverage of today's construction materials, methods and techniques that is critical to success in the industry. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

The current design practice of precast buildings is based on a frame mode, where the peripheral cladding panels enter only as masses without any stiffness. The panels are then connected to the structure with fastenings dimensioned with a local calculation on the basis of their mass for anchorage forces orthogonal to the plane of the panels. This design approach does not work, as it was recently dramatically shown by several recent violent shakes, like L'Aquila (Italy) in 2009, Grenada (Spain) in 2010, and Emilia (Italy) in 2012. The panels, fixed in this way to the structure, come to be integral part of the resisting system, conditioning its seismic response. The high stiffness of this resisting system leads to forces much higher than those calculated from the frame model. These forces are related to the global mass of the floors and are primarily directed in the plane of the walls. Furthermore, the seismic force reduction in the type of precast structures of concern relies on energy dissipation in plastic hinges formed in the columns. Very large drifts of the columns are needed to activate this energy dissipation foreseen in design. However, typically, the capacity of the connections between cladding and structure is exhausted well before such large drifts can develop. Therefore, the design of these connections cannot rely on the seismic reduction factor used for design of the bare structure. New technological solutions for connectors with proper design approaches were urgently required. The research project **SAFECLADDING** was thus aimed at investigating, by means of a balanced combination of experimental and analytical activity, the seismic behaviour of precast structures with cladding wall panels and at developing innovative connection devices and novel design approaches for a correct conception and dimensioning of the fastening system to guarantee good seismic performance of the structure throughout its service life. The final outcome of the **SAFECLADDING** project is represented by a set of documents providing the design guidelines produced by the consortium. The guidelines have a theoretical derivation supported by the experimental results of the testing campaigns and numerical simulations performed within the project. General know-how on production practice and international literature on the subject have been also considered. The present document provides the design guidelines for the wall panel connections. A companion document provides the design guidelines for precast structures with cladding panels.

**Modern Construction Handbook** has become a modern classic of building construction literature. In the USA, it is used as a reference work for many architectural courses. With the chapters "Material", "Wall", "Roof", "Structure", "Environment" and "Applications" it systematically explores the subject and provides a clear and efficient structure to the reader. For the fourth edition, many of the 3D illustrations have been updated and, likewise, the technical information has been brought up to date. "Applications" showcases current developments, such as those relating to mass customization manufacture of components, and presents material and construction innovations. A compact and systematic handbook filled with information, produced for students and young architects alike. Recent earthquakes have demonstrated that despite the continuous developments of novel materials and new strengthening techniques, the majority of the existing structures are still unprotected and at high seismic risk. The repair and strengthening framework is a complex process and there are often barriers in the preventative upgrade of the existing structures related to the cost of the applications and the limited expertise of the engineers. The engineers need to consider various options thoroughly and the selection of the appropriate strategy is a crucial parameter for the success of these applications. The main aim of this collection is to present a number of different approaches applied to a wide range of structures with different characteristics and demands acting as a practical guide for the main repair and strengthening approaches used worldwide. This document contains a collection of nine case studies from six different countries with different seismicity (i.e. Austria, Greece, Italy, Mexico, Nepal and New Zealand). Various types of structures have been selected with different structural peculiarities such as buildings used for different purposes (i.e. school buildings, town hall, 30 storey office tower), a bridge, and a wharf. Most of the examined structures are Reinforced Concrete structures while there is also an application on a Masonry building. For each of the examined studies, the local conditions are described followed by the main deficiencies which are addressed. The methods used for the assessment of the in-situ conditions also presented and alternative strategies for the repair and strengthening are considered.

**Current Perspectives and New Directions in Mechanics, Modelling and Design of Structural Systems** comprises 330 papers that were presented at the Eighth International Conference on Structural Engineering, Mechanics and Computation (SEMC 2022, Cape Town, South Africa, 5-7 September 2022). The topics featured may be clustered into six broad categories that span the themes of mechanics, modelling and engineering design: (i) mechanics of materials (elasticity, plasticity, porous media, fracture, fatigue, damage, delamination, viscosity, creep, shrinkage, etc); (ii) mechanics of structures (dynamics, vibration, seismic response, soil-structure interaction, fluid-structure interaction, response to blast and impact, response to fire, structural stability, buckling, collapse behaviour); (iii) numerical modelling and experimental testing (numerical methods, simulation techniques, multi-scale modelling, computational modelling, laboratory testing, field testing, experimental measurements); (iv) design in traditional engineering materials (steel, concrete, steel-concrete composite, aluminium, masonry, timber); (v) innovative concepts, sustainable engineering and special structures (nanostructures, adaptive structures, smart structures, composite structures, glass structures, bio-inspired structures, shells, membranes, space structures, lightweight structures, etc); (vi) the engineering process and life-cycle considerations (conceptualisation, planning, analysis, design, optimization, construction, assembly, manufacture, maintenance, monitoring,

assessment, repair, strengthening, retrofitting, decommissioning). Two versions of the papers are available: full papers of length 6 pages are included in the e-book, while short papers of length 2 pages, intended to be concise but self-contained summaries of the full papers, are in the printed book. This work will be of interest to civil, structural, mechanical, marine and aerospace engineers, as well as planners and architects. As the Building Regulations and Approved Documents have become more and more complex, they have become increasingly unfriendly for a professional user. Compliance is only possible by understanding a wide range of supporting documentation. Alternative approaches are implied, but not described or analysed. This series of books on individual Documents goes far beyond analysis of the Regulations and Documents themselves, and offers practical advice on using not just the traditional routes to compliance but also on the alternative approaches suggested but not explained in the Approved Documents. The advantages and disadvantages of each form of compliance are analysed in depth. This book examines in detail Part C on Site Preparation and takes the user through all the key stages of preparation, compliance, inspection and enforcement. \*Detailed guidance to Part C \*Practical advice to achieve compliance \*Alternative approaches explained and evaluated

Note from the publisher: Now in its sixth edition, this bestselling reference focuses on the basic materials and methods used in building construction. Emphasizing common construction systems such as light wood frame, masonry bearing wall, steel frame, and reinforced concrete construction, the new edition includes new information on building materials properties; the latest on "pre-engineered" building components and sustainability issues; and reflects the latest building codes and standards. It also features an expanded series of case studies along with more axonometric detail drawings and revised photographs for a thoroughly illustrated approach. The second edition of this popular textbook provides, in a single volume, an introduction to the design of structural elements in concrete, steel, timber and masonry. Part One explains the principles and philosophy of design, basic techniques, and structural concepts. Designing in accordance with British Standard codes of practice follows in Part Two, with numerous diagrams and worked examples. In Part Three the Eurocodes are introduced, and their main differences to British codes are explained. Comprehensively revised and updated to comply with the latest British Standards and Eurocodes, the second edition also features a new section on the use and design of composite materials. With an accompanying solutions manual available online, Design of Structural Elements is the ideal course text for students of civil and structural engineering, on degree, HNC and HND courses. This volume is a study guide for the civil engineer taking the PE exam. Solved problems throughout each chapter reinforce the concepts discussed in the text. "Twelve peer-reviewed papers demonstrate the continuing advancement in the understanding of dimension stone used in building construction. Topics cover: Strength Testing--addresses testing to determine strength characteristics of dimension stone cladding panels. Design--covers a wide range of topics, including the advantages and disadvantages of three common dimension stone paving installation techniques; the relationships between stone material strength, anchorage strength, and induced stress states for four common dimension stone cladding anchorage configurations; and more. Evaluation and Investigation--provides observations regarding investigations into the causes of dimension stone cladding deterioration and failure. Durability--discusses the complex issue of dimension stone durability using three different approaches; a large-scale European research project to investigate the causes of marble and limestone cladding panel bowing, develop preconstruction testing parameters to assess bowing potential, and assess proposed remedial efforts to reduce or inhibit ongoing bowing; and more."--Publisher's website. Provides the building industry (architects, engineers, manufacturers, and contractors) with information and solutions based on actual building projects. Fourteen papers cover: design concerns of exterior wall systems, testing and analysis, structural sealant glazing, stone selection, and precast and

The current design practice of precast buildings is based on a frame mode, where the peripheral cladding panels enter only as masses without any stiffness. The panels are then connected to the structure with fastenings dimensioned with a local calculation on the basis of their mass for anchorage forces orthogonal to the plane of the panels. This design approach does not work, as it was recently dramatically shown by several recent violent shakes, like L'Aquila (Italy) in 2009, Grenada (Spain) in 2010, and Emilia (Italy) in 2012. The panels, fixed in this way to the structure, come to be integral part of the resisting system, conditioning its seismic response. The high stiffness of this resisting system leads to forces much higher than those calculated from the frame model. These forces are related to the global mass of the floors and are primarily directed in the plane of the walls. Furthermore, the seismic force reduction in the type of precast structures of concern relies on energy dissipation in plastic hinges formed in the columns. Very large drifts of the columns are needed to activate this energy dissipation foreseen in design. However, typically, the capacity of the connections between cladding and structure is exhausted well before such large drifts can develop. Therefore, the design of these connections cannot rely on the seismic reduction factor used for design of the bare structure. New technological solutions for connectors with proper design approaches were urgently required. The research project SAFECLADDING was thus aimed at investigating, by means of a balanced combination of experimental and analytical activity, the seismic behaviour of precast structures with cladding wall panels and at developing innovative connection devices and novel design approaches for a correct conception and dimensioning of the fastening system to guarantee good seismic performance of the structure throughout its service life. The final outcome of the SAFECLADDING project is represented by a set of documents providing the design guidelines produced by the consortium. The guidelines have a theoretical derivation supported by the experimental results of the testing campaigns and numerical simulations performed within the project. General know-how on production practice and international literature on the subject have been also considered. The present document provides the design guidelines for precast structures with cladding panels. A companion document provides the design guidelines for the wall panel connections.

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