

Manual Prestressed Concrete Design To Eurocodes

In 1994 fib Commission 6: Prefabrication edited a successful Planning and Design Handbook that ran to approximately 45,000 copies and was published in Spanish and German. Nearly 20 years later Bulletin 74 brings that first publication up to date. It offers a synthesis of the latest structural design knowledge about precast building structures against the background of 21st century technological innovations in materials, production and construction. With it, we hope to help architects and engineers achieve a full understanding of precast concrete building structures, the possibilities they offer and their specific design philosophy. It was principally written for non-seismic structures. The handbook contains eleven chapters, each dealing with a specific aspect of precast building structures. The first chapter of the handbook highlights best practice opportunities that will enable architects, design engineers and contractors to work together towards finding efficient solutions, which is something unique to precast concrete buildings. The second chapter offers basic design recommendations that take into account the possibilities, restrictions and advantages of precast concrete, along with its detailing, manufacture, transport, erection and serviceability stages. Chapter three describes the precast solutions for the most common types of buildings such as offices, sports stadiums, residential buildings, hotels, industrial warehouses and car parks. Different application possibilities are explored to teach us which types of precast units are commonly used in all those situations. Chapter four covers the basic design principles and systems related to stability. Precast concrete structures should be designed according to a specific stability concept, unlike cast in-situ structures. Chapter five discusses structural connections. Chapters six to nine address the four most commonly used systems or subsystems of precast concrete in buildings, namely, portal and skeletal structures, wall-frame structures, floor and roof structures and architectural concrete facades. In chapter ten the design and detailing of a number of specific construction details in precast elements are discussed, for example, supports, corbels, openings and cutouts in the units, special features related to the detailing of the reinforcement, and so forth. Chapter eleven gives guidelines for the fire design of precast concrete structures. The handbook concludes with a list of references to good literature on precast concrete construction.

This book gives bridge engineers clear guidance on design and includes 88 data sheets of design information, charts and check lists.

The NCEES SE Exam is Open Book - You Will Want to Bring This Book Into the Exam. Alan Williams' PE Structural Reference Manual Tenth Edition (STRM10) offers a complete review for the NCEES 16-hour Structural Engineering (SE) exam. This book is part of a comprehensive learning management system designed to help you pass the PE Structural exam the first time. PE Structural Reference Manual Tenth Edition (STRM10) features include: Covers all exam topics and provides a comprehensive review of structural analysis and design methods New content covering design of slender and shear walls Covers all up-to-date codes for the October 2021 Exams Exam-adopted codes and standards are frequently referenced, and solving methods—including strength design for timber and masonry—are thoroughly explained 270 example problems Strengthen your problem-solving skills by working the 52 end-of-book practice problems Each problem's complete solution lets you check your own solving approach Both ASD and LRFD/SD solutions and explanations are provided for masonry problems, allowing you to familiarize yourself with different problem solving methods. Topics Covered: Bridges Foundations and Retaining Structures Lateral Forces (Wind and Seismic) Prestressed Concrete Reinforced Concrete Reinforced Masonry Structural Steel Timber Referenced Codes and Standards - Updated to October 2021 Exam Specifications: AASHTO LRFD Bridge Design Specifications (AASHTO) Building Code Requirements and Specification for Masonry Structures (TMS 402/602) Building Code Requirements for Structural Concrete (ACI 318) International Building Code (IBC) Minimum Design Loads for Buildings and Other Structures (ASCE 7) National Design Specification for Wood Construction ASD/LRFD and National Design Specification Supplement, Design Values for Wood Construction (NDS) North American Specification for the Design of Cold-Formed Steel Structural Members (AISI) PCI Design Handbook: Precast and Prestressed Concrete (PCI) Seismic Design Manual (AISC 327) Special Design Provisions for Wind and Seismic with Commentary (SDPWS) Steel Construction Manual (AISC 325) - Bridge type, behaviour and appearance David Bennett, David Bennett Associates · History of bridge development · Bridge form · Behaviour - Loads and load distribution Mike Ryall, University of Surrey · Brief history of loading specifications · Current code specification · Load distribution concepts · Influence lines - Analysis Professor R Narayanan, Consulting Engineer · Simple beam analysis · Distribution co-efficients · Grillage method · Finite elements · Box girder analysis: steel and concrete · Dynamics - Design of reinforced concrete bridges Dr Paul Jackson, Gifford and Partners · Right slab · Skew slab · Beam and slab · Box - Design of prestressed concrete bridges Nigel Hewson, Hyder Consulting · Pretensioned beams · Beam and slab · Pseudo slab · Post tensioned concrete beams · Box girders - Design of steel bridges Gerry Parke and John Harding, University of Surrey · Plate girders · Box girders · Orthotropic plates · Trusses - Design of composite bridges David Collings, Robert Benaim and Associates · Steel beam and concrete · Steel box and concrete · Timber and concrete - Design of arch bridges Professor Clive Melbourne, University of Salford · Analysis · Masonry · Concrete · Steel · Timber - Seismic analysis of design Professor Elnashai, Imperial College of Science, Technology and Medicine · Modes of failure in previous earthquakes · Conceptual design issues · Brief review of seismic design codes - Cable stayed bridges - Daniel Farquhar, Mott Macdonald · Analysis · Design · Construction - Suspension bridges Vardaman Jones and John Howells, High Point Rendel · Analysis · Design · Construction - Moving bridges Charles Birnstiel, Consulting engineer · History · Types · Special problems - Substructures Peter Lindsell, Peter Lindsell and Associates · Abutments · Piers - Other structural elements Robert Broome et al, WS Atkins · Parapets · Bearings · Expansion joints - Protection Mike Mulheren, University of Surrey · Drainage · Waterproofing · Protective coating/systems for concrete · Painting system for steel · Weathering steel · Scour protection · Impact protection - Management systems and strategies Perrie Vassie, Transport Research Laboratory · Inspection · Assessment · Testing · Rate of deterioration · Optimal maintenance programme · Prioritisation · Whole life costing · Risk analysis - Inspection, monitoring, and assessment Charles Abdunur, Laboratoire Central Des Ponts et Chaussées · Main causes of deterioration · Investigation methods · Structural evaluation tests · Stages of structural assessment · Preparing for recalculation - Repair and Strengthening John Darby, Consulting Engineer · Repair of concrete structures · Metal structures · Masonry structures · Replacement of structures

The third edition of this authoritative handbook provides the structural designer with comprehensive guidance on prestressed concrete and its effective use, covering materials, behaviour, analysis and design of prestressed elements. It includes numerous examples, design charts and details of post-tensioning systems.

