Concrete In The Service Of Mankind Appropriate Concrete Technology Vol 3

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Lessons from Concrete Structures in Service
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Durability Design of Concrete Structures in Severe Environments, Second Edition
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Durability Management with Regard to Reinforcement Corrosion and Alkali-silica Reaction : State of the Art and Guide for the Implementation of a Predictive Performance Approach Based Upon Durability Indicators
Concrete Technology
Service Life Design of Concrete Structures
Guide for Making a Condition Survey of Concrete in Service
Proceedings of 4th International RILEM PhD Workshop held in Madrid, Spain, November19, 2010
Developments in the Formulation and Reinforcement of Concrete
Betongkonstrucktioners Livslängd-i Kloridmiljö
Repair of Concrete Bridges
Advances in Modeling Concrete Service Life
A Field Investigation of Early Opening-to-Traffic Portland Cement Concrete from In-service Pavements
Presented at IABSE-FIP-CEB-RILEM-Colloquium "Behaviour in Service of Concrete Structures", Liege, 1975
Corrosion and its Consequences for Reinforced Concrete Structures
Appropriate concrete technology
Concrete Repairs
Manual on Service Life of Corrosion-damaged Reinforced Concrete Bridge Superstructure Elements
Report to the Congress of the United States [on The] Public Buildings Service, General Services Administration

LIU MURRAY

Linings Over Concrete for Immersion Service Woodhead Publishing
Concrete in the Service of MankindRadical concrete technologyCRC Press
Proceedings of ConcreteLife'20 fib Fédération internationale du béton
One of the most pressing problems facing the construction industry globally is the deterioration of major concrete infrastructure in marine and other chloride-containing environments. While recent advancements in concrete technology have made it easier to control the negative impact of deteriorating processes such as alkali-aggregate reaction, freezing and thawing and chemical attack, chloride-induced corrosion of embedded steel continues to pose the biggest threat to structure durability and performance. The second edition of Durability Design of Concrete Structures in Severe Environments focuses on enhancing the durability and service life of concrete structures. The text describes field experience and deteriorating processes of concrete structures in severe environments, and includes current data based on extensive field investigations. It presents a durability design based on calculation of corrosion probability, and outlines additional protective strategies and measures. The text also describes procedures for performance-based concrete quality control and quality assurance with documentation of achieved construction quality and compliance with specified durability. The text further covers calculation of life cycle costs and life cycle assessment, and includes some new recommended job specifications. What's New in the Second Edition: This second edition delivers more results and experience from practical applications of the probability-based durability design and the performance-based concrete quality control. It includes recent commercial projects both for Oslo Harbor KF and Nye Tjuvholmen KS in Oslo, and contains some preliminary results from the more comprehensive research program "Underwater Infrastructure and Underwater City of the Future" at Nanyang Technological University in Singapore. The book serves as an essential guide both for the owners and the consulting and construction engineers involved in new and major concrete infrastructure design and construction.
Reinforced Concrete Structures CRC Press
In this book, a critical analysis is made on service life models related to reinforcement corrosion. The contributors are on the frontier of knowledge in the field of durability of reinforced concrete. Topics covered in the book include: causes and mechanisms of deterioration, transport mechanisms in concrete, numerical modeling of concrete behavior, durability modeling and prediction, reliability approach to structural design for durability, structural behavior following degradation of concrete structures, deterioration and repair of concrete structures, and corrosion measurement techniques.
Concrete Durability and Service Life Planning John Wiley & Sons
This third volume of Concrete in the Service of Mankind focuses on appropriate concrete technology. Concrete is ubiquitous and unique, and is found in every developed and developing country. Indeed, there are no alternatives to concrete as a volume construction material for infrastructure. This raises important questions of how concrete should be designed and constructed for cost effective use in the the short and long term, and to encourage further radical development. Equally, it must be environmentally friendly during manufacture, in an aesthetic presentation in structures and in the containment of harmful materials. This book should be of interest to concrete technologists; contractors; civil engineers; consultants; government agencies; research organizations.
Lessons from Concrete Structures in Service CRC Press
This book serves as an indispensable guide for engineers, scientists and researchers, exploring the fundamental aspects of corrosion in reinforced concrete. Its originality lies in the coupling between the reinforcement corrosion of reinforced concrete and its mechanical behavior.The authors describe the specific theoretical foundations of the corrosion of steel in concrete and its interactions with the structural aspects, including service cracking and defects in the placement of concrete. The book contains a study of the mechanisms of degradation of the mechanical behavior of reinforcements and the reinforced concrete composite, such as reduction of ductility, bearing capacity, redistribution of efforts by formation of plastic hinges and increase in the beam deflection in service. A diagnostic method based on corrosion-induced crack detection is presented in the book, and then paired with a recalculation method which allows us to predict the different aspects of the residual mechanical behavior. Several end-of-life ELS and ELU criteria are described, and the authors propose an approach to estimate the residual lifetime. Finally, the book presents the cathodic protection that allows the progression of corrosion to be contained within the corroded structures. As well as academics, this book is aimed at civil engineers who are faced with the issue of corrosion in aging structures. Explores corrosion in concrete Examines the influence of pre-cracks on corrosion Discusses corrosion diagnostics and corrosion-induced cracks Presents residual mechanical properties of corroded structures: effect of corrosion on steel behavior, load-bearing capacity, yielding capacity, deflection of corroded beams and the effect of corrosion on bond Provides repair and maintenance considerations: cathodic protection and carbon fiber reinforced polymer used to strengthen and restore bearing capacity
Journal of the American Institute of Architects Springer
Around 50% of Europe's annual construction budget is spent on refurbishment and repair of existing structures. This report is the culmination of a wide-ranging survey into the performance of both current European concrete repair techniques and inspection practice, and current research projects. It assesses case histories gathered from across the sector from owners of concrete structures, repairers and research institutes, and presents its findings using charts, graphs, tables and photographs. A review of the problems of concrete durability, current issues of sustainability, and the differing expectations of what concrete

repairs should acheive, provide an insightful introduction to the subject. The survey was conducted by the CONREPNET network, made up of European research and representative bodies sponsored by the European Commission.

Durability Design of Concrete Structures in Severe Environments, Second Edition Springer Science & Business Media

Developments in the Formulation and Reinforcement of Concrete, Second Edition, presents the latest developments on topics covered in the first edition. In addition, it includes new chapters on supplementary cementitious materials, mass concrete, the sustainably of concrete, service life prediction, limestone cements, the corrosion of steel in concrete, alkali-aggregate reactions, and concrete as a multiscale material. The book's chapters introduce the reader to some of the most important issues facing today's concrete industry. With its distinguished editor and international team of contributors, users will find this to be a must-have reference for civil and structural engineers. Summarizes a wealth of recent research on structural concrete, including material microstructure, concrete types, and variation and construction techniques Emphasizes concrete mixture design and applications in civil and structural engineering Reviews modern concrete materials and novel construction systems, such as the precast industry and structures requiring high-performance concrete

Textbook on behaviour, design and performance, Second edition CRC Press

Sets out basic theory for the behavior of reinforced concrete structural elements and structures in considerable depth. Emphasizes behavior at the ultimate load, and, in particular, aspects of the seismic design of reinforced concrete structures. Based on American practice, but also examines European practice.

Stress Analysis of Concrete Sections Under Service Load Thomas Telford Publishing

This fourth volume of Concrete in the Service of Mankind focuses on radical concrete technology. Concrete is ubiquitous and unique, and is found in every developed and developing country. Indeed, there are no alternatives to concrete as a volume construction material for infrastructure. This raises important questions of how concrete should be designed and constructed for cost effective use in the the short and long term, and to encourage further radical development. Equally, it must be environmentally friendly during manufacture, in an aesthetic presentation in structures and in the containment of harmful materials. This book should be of interest to concrete technologists; contractors; civil engineers; consultants; government agencies; research organizations.

Concrete in the Service of Mankind American Concrete Institute

Durability and service life design of concrete constructions have considerable socio-economic and environmental consequences, in which the permeability of concrete to aggressive intruders plays a vital role. Concrete Permeability and Durability Performance provides deep insight into the permeability of concrete, moving from theory to practice, and presents over 20 real cases, such as Tokyo’s Museum of Western Art, Port of Miami Tunnel and Hong Kong-Zhuhai-Macao sea-link, including field tests in the Antarctic and Atacama Desert. It stresses the importance of site testing for a realistic durability assessment and details the "Torrent Method" for non-destructive measurement of air-permeability. It also delivers answers for some vexing questions: Should the coefficient of permeability be expressed in m2 or m/s? How to get a "mean" pore radius of concrete from gas-permeability tests? Why should permeability preferably be measured on site? How can service life of reinforced concrete structures be predicted by site testing of gas-permeability and cover thickness? Practitioners will find stimulating examples on how to predict the coming service life of new structures and the remaining life of existing structures, based on site testing of air-permeability and cover thickness. Researchers will value theoretical principles, testing methods, as well as how test results reflect the influence of concrete mix composition and processing.

Radical concrete technology CRC Press

This volume gathers the proceedings of the 3rd International RILEM Workshop on Concrete Durability and Service Life Planning (ConcreteLife’20), held in Haifa, Israel in January 2020. The papers cover a range of topics in concrete curing, cracking in concrete structures, corrosion of steel in concrete, thermal and hygral effects, concrete in cold climates and under high temperatures, recycling, alkali-silica reactions, chloride and sulfate attacks, marine structures, transport phenomena, durability design, microstructure of concrete and volume changes, and life cycle assessment. The book also explores future trends in research, development, and practical engineering applications related to durable concrete construction, and focuses on the design and construction of concrete structures exposed to various environmental conditions and mechanical loading. Given its scope, it offers a valuable asset for all researchers and graduate students in the areas of cement chemistry, cement production, and concrete design.

Time-dependent Behaviour and Design of Composite Steel-concrete Structures CRC Press

Provides a review of the repair, maintenance and protection of concrete bridges. This book summarizes information from conference papers, research and technical reports, and others. It aims to increase the expertise of structural engineers and safeguard the investment. It presents solutions to the problems and pitfalls that engineers encounter.

REINFORCED CONCRETE DESIGN 3E Springer Nature

Steel-concrete composite structures are widely used throughout the world for buildings and bridges. A distinguishing feature of this form of construction is the combination of concrete and steel components to achieve enhanced structural performance. The time-dependent response of concrete and its influence on the service behaviour and design of composite structures are the main focus of this SED. For the first time, a publication combines a state-of-the-art review of the research with the available design specifications of Europe, Australia and New Zealand, and USA. This publication intends to enhance the awareness of the service response of composite structures and of the latest research and standards’ developments. It is aimed at designers and researchers alike. The review of research available in open literature is provided and arranged according to structural typologies, i. e. slabs, beams, and columns. It serves as background information for current service design rules and provides insight into the most recent research advancements. The review of available design guidelines presents the similarities and differences of the recommended service design procedures influenced by concrete time effects. Selected case studies of building and bridge projects show possible design approaches and the rationale required when dealing with the time-dependent response and design of composite structures. The authors of this publication are design engineers and academics involved in the service design and research on the time-dependent response of

composite structures.

Monolithic Reinforced Concrete Construction with Ceco Service Bre Press

This book provides a collection of recent research works, related to structural stability and durability, service life, reinforced concrete structures, recycled materials, and sustainability with endogenic materials. Intended as an overview of the current state of knowledge, the book will benefit scientists, students, practitioners, lecturers and other interested parties. At the same time, the topics covered are relevant to a variety of scientific and engineering disciplines, including civil, materials and mechanical engineering.

Fundamentals, Design, Examples Elsevier

Selected chapters from the German concrete yearbook are now being published in the new English "Beton-Kalender Series" for the benefit of an international audience. Since it was founded in 1906, the Ernst & Sohn "Beton-Kalender" has been supporting developments in reinforced and prestressed concrete. The aim was to publish a yearbook to reflect progress in "ferro-concrete" structures until - as the book's first editor, Fritz von Emperger (1862-1942), expressed it - the "tempestuous development" in this form of construction came to an end. However, the "Beton-Kalender" quickly became the chosen work of reference for civil and structural engineers, and apart from the years 1945-1950 has been published annually ever since. Ultra high performance concrete (UHPC) is a milestone in concrete technology and application. It permits the construction of both more slender and more durable concrete structures with a prolonged service life and thus improved sustainability. This book is a comprehensive overview of UHPC - from the principles behind its production and its mechanical properties to design and detailing aspects. The focus is on the material behaviour of steel fibre-reinforced UHPC. Numerical modelling and detailing of the connections with reinforced concrete elements are featured as well. Numerous examples worldwide - bridges, columns, facades and roofs - are the basis for additional explanations about the benefits of UHPC and how it helps to realise several architectural requirements. The authors are extensively involved in the testing, design, construction and monitoring of UHPC structures. What they provide here is therefore a unique synopsis of the state of the art with a view to practical applications.

Designed for Hard Service Concrete in the Service of MankindRadical concrete technology

This revised edition follows provisions of IS 456:2000 as well as related current codes and the advanced development that have taken place in the field of Reinforced Concrete Design. Written for students and engineers, this book lays great emphasis on conceptual clarity through state-of-the art coverage of all required topics.

Practices for Evaluation of Concrete in Existing Massive Structures for Service Conditions (Reapproved 2008) International Association for Bridge and Structural Engineering

There is no alternative to concrete as a volume construction material for infrastructure. This raises important questions about how concrete should be optmised for short and long-term cost effectiveness, whilst allowing flexibility for radical innovations and developments. Concrete for Infrastructure and Utilties forms the Proceedings of the three day International Conference held during the Congress, Concrete in the Service of Mankind. 24-28 June 1996, organised by the Concrete Technology Unit, University of Dundee. It brings together the experience and technology of those involved in key infrastructure and utility construction. Topics discussed include the use of concrete structures in flood and coastal protection and in important transportation infrastructure such as bridges, roads, tunnels and airports. Also discussed is the use of concrete in the fields of oil and gas exploration, nuclear containment and in the construction of facilities to exploit alternative sources of energy, such as wind and water power.

Structural Concrete, Volume 3 Transportation Research Board

The second edition of the Structural Concrete Textbook is an extensive revision that reflects advances in knowledge and technology over the past decade. It was prepared in the intermediate period from the CEP-FIP Model Code 1990 (MC90) tofib Model Code 2010 (MC2010), and as such incorporates a significant amount of information that has been already finalized for MC2010, while keeping some material from MC90 that was not yet modified considerably. The objective of the Textbook is to give detailed information on a wide range of concrete engineering from selection of appropriate structural system and also materials, through design and execution and finally behaviour in use. The revised fib Structural Concrete Textbook covers the following main topics: phases of design process, conceptual design, short and long term properties of conventional concrete (including creep, shrinkage, fatigue and temperature influences), special types of concretes (such as self compacting concrete, architectural concrete, fibre reinforced concrete, high and ultra high performance concrete), properties of reinforcing and prestressing materials, bond, tension stiffening, moment-curvature, confining effect, dowel action, aggregate interlock; structural analysis (with or without time dependent effects), definition of limit states, control of cracking and deformations, design for moment, shear or torsion, buckling, fatigue, anchorages, splices, detailing; design for durability (including service life design aspects, deterioration mechanisms, modelling of deterioration mechanisms, environmental influences, influences of design and execution on durability); fire design (including changes in material and structural properties, spalling, degree of deterioration), member design (linear members and slabs with reinforcement layout, deep beams); management, assessment, maintenance, repair (including, conservation strategies, risk management, types of interventions) as well as aspects of execution (quality assurance), formwork and curing. The updated Textbook provides the basics of material and structural behaviour and the fundamental knowledge needed for the design, assessment or retrofitting of concrete structures. It will be essential reading material for graduate students in the field of structural concrete, and also assist designers and consultants in understanding the background to the rules they apply in their practice. Furthermore, it should prove particularly valuable to users of the new editions of Eurocode 2 for concrete buildings, bridges and container structures, which are based only partly on MC90 and partly on more recent knowledge which was not included in the 1999 edition of the Textbook.

Concrete in the Service of Mankind Tata McGraw-Hill Education

Post-behaviour of Concrete Structures Subjected to Fire John Wiley & Sons