

Sample Report Reinforced Concrete Beam Example Eurocodes

This book offers a complete diagnosis of concrete samples collected from a pile cap block of residential buildings affected by internal swelling reactions. Covering an extensive laboratory campaign to evaluate the transport properties of concrete samples, as well as their physical and chemical composition using advanced techniques to analyse cores extracted from real buildings that have concrete elements affected by internal swelling reactions (ISR). It features several rehabilitation procedures, pile caps repair and rehabilitation design, executed using strengthening procedures to provide the complete restoration of the structural integrity of the element deteriorated. These rehabilitation procedures proved to be a good solution to retrofit pile cap deteriorated by expansions due to internal swelling reactions of concrete. The book also offers a systematic review of the current state of knowledge and it is a valuable resource for scientists, students, and practitioners in various scientific and engineering disciplines, namely, civil and materials engineering, as well as and other interested parties.

This book analyses the current knowledge on structural behaviour of RC elements and structures strengthened with composite materials (experimental, analytical and numerical approaches for EBR and NSM), particularly in relation to the above topics, and the comparison of the predictions of the current available codes/recommendations/guidelines with selected experimental results. The book shows possible critical issues (discrepancies, lacunae, relevant parameters, test procedures, etc.) related to current code predictions or to evaluate their reliability, in order to develop more uniform methods and basic rules for design and control of FRP strengthened RC structures. General problems/critical issues are clarified on the basis of the actual experiences, detect discrepancies in existing codes, lacunae in knowledge and, concerning these identified subjects, provide proposals for improvements. The book will help to contribute to promote and consolidate a more qualified and conscious approach towards rehabilitation and strengthening existing RC structures with composites and their possible monitoring.

Innovative AE and NDT Techniques for On-Site Measurement of Concrete and Masonry Structures

U.S. Government Research Reports

State-of-the-art report

Proceedings of a RILEM Workshop dedicated to Professor Arne Hillerborg, Abisko, Sweden 1989

Reports of the Department of the Interior

This book presents the latest research findings of the fast developing applications of fracture mechanics to concrete structures. Key papers from leading experts in the field describe existing and new modelling techniques in the analysis of materials and structures. The book explains the practical application of fracture mechanics to structural modelling, bending, shear, bond and anchorage. The proceedings of this RILEM Workshop will be an important reference for those engaged in design, development, research and teaching in the field of concrete structures.

For the moments of a function of jointly distributed random variables, an approximate solution is derived that does not require an explicit closed form expression for the derivatives of the function. The solution is based on a linear approximation of the implicit functional relation. This technique is applied to the resistance of a reinforced concrete member subjected to combined bending and thrust, and the results are compared with those obtained from Monte Carlo simulations. The variability of this resistance due to fabrication randomness, which plays a central role in the derivation of a reliability-based design safety factor, is also discussed. Next, the larger uncertainty associated with the resistance of a beam-column, whose individual mean parameters must themselves be estimated as in the condition survey of an existing structure of unknown design, is examined. Finally, the importance of factors omitted from the resistance functional relation is considered. (Author).

Analysis of Reinforced Concrete Beams Subjected to Fire

Composite Structures of Steel and Concrete

Application of an Implicit Linear Statistical Analysis to the Estimation of the Resistance of a Reinforced Concrete Beam-column

Supplementary Report of the Highway Cost Allocation Study

Annual Report of the United States Geological Survey to the Secretary of the Interior

The research and its outcomes presented in this book treat applications of NDT techniques to on-site measurements. These on-site measurements have been marginally successful as each technique requires a particular analysis. In this regard, visualization and imaging of results are in great demand for practitioners and engineers for inspection. This volume, in which on-site measurements of concrete and masonry structures by NDT techniques are comprehensively summarized, focuses on the visualization procedure of the results measured. The book will therefore be of great value to the field.

REINFORCED CONCRETE GRADE BEAMS, PILES & CAISSONS A Simplified Guide for Hillside Engineering This book is the torchlight for Architects, engineers, contractors & homeowners. It tells about different type of soils & how they create problems when building a structure on it. The book tells the reader about how to solve the problems of soft soil by going deep into foundation by supporting the structure on grade beams, piles & caissons. It brings the information about the role of different professionals who are involved in solving these problems & building a dream structure for an ambitious homeowner. Several homeowners desire to live on nice, isolated, beautiful, dreamlike land. But they do not have any information about how this work is done. Another important characteristic of construction is loads, which are additional loads due to the Alluvium soil, depth of the deep foundation & availability of hard rock & slope of the site location, daylight to the edge of the foundation & water table elevation etc. It discusses the importance of soil report & Geotechnical engineers soil samples. Importance of loads & load combinations are emphasized. Most important aspect is the CODE which has control of the local authority, State authority & International authority. Not only that all the revisions in CODE shall be considered. The book gives several useful formulas for structural engineering calculations for this kind of structures. I have added real life work samples which I have done for design of hillside structures. By Raksha N. Parmar (P.E.) State of California

Durability and Behavior of Prestressed Concrete Beams

Diagnostic of Concrete Samples Affected by Internal Swelling Reactions

Industrial Magazine

Seismic Assessment and Retrofit of Reinforced Concrete Buildings

In most parts of the developed world, the building stock and the civil infrastructure are ageing and in constant need of maintenance, repair and upgrading. Moreover, in the light of our current knowledge and of modern codes, the majority of buildings stock and other types of structures in many parts of the world are substandard and deficient. This is especially so in earthquake-prone regions, as, even there, seismic design of structures is relatively recent. In those regions the major part of the seismic threat to human life and property comes from old buildings. Due to the infrastructure's increasing decay, frequently combined with the need for structural upgrading to meet more stringent design requirements (especially against seismic loads), structural retrofitting is becoming more and more important and receives today considerable emphasis throughout the world. In response to this need, a major part of the fib Model Code 2005, currently under development, is being devoted to structural conservation and maintenance. More importantly, in recognition of the importance of the seismic threat arising from existing substandard buildings, the first standards for structural upgrading to be promoted by the international engineering community and by regulatory authorities alike are for seismic rehabilitation of buildings. This is the case, for example, of Part 3: Strengthening and Repair of Buildings of Eurocode 8 (i. e. of the draft European Standard for earthquake-resistant design), and which is the only one among the current (2003) set of 58 Eurocodes attempting to address the problem of structural upgrading. It is also the case of the recent (2001) ASCE draft standard on Seismic evaluation of existing buildings and of the 1996 Law for promotion of seismic strengthening of existing reinforced concrete structures in Japan. As noted in Chapter 1 of this Bulletin, fib - as CEB and FIP did before - has placed considerable emphasis on assessment and rehabilitation of existing structures. The present Bulletin is a culmination of this effort in the special but very important field of seismic assessment and rehabilitation. It has been elaborated over a period of 4 years by Task Group 7.1 Assessment and retrofit of existing structures of fib Commission 7 Seismic design, a truly international team of experts, representing the expertise and experience of all the important seismic regions of the world. In the course of its work the team had six plenary two-day meetings: in January 1999 in Pavia, Italy; in August 1999 in Raleigh, North Carolina; in February 2000 in Queenstown, New Zealand; in July 2000 in Patras, Greece; in March 2001 in Lausanne, Switzerland; and in August 2001 in Seattle, Washington. In October 2002 the final draft of the Bulletin was presented to public during the 1st fib Congress in Osaka. It was also there that it was approved by fib Commission 7 Seismic Design. The contents is structured into main chapters as follows: 1 Introduction - 2 Performance objectives and system considerations - 3 Review of seismic assessment procedures - 4 Strength and deformation capacity of non-seismically detailed components - 5 Seismic retrofitting techniques - 6 Probabilistic concepts and methods - 7 Case studies

Publisher Description

Study of Construction Methodology and Structural Behaviour of Fabric-formed Form-efficient Reinforced Concrete Beam

Annual Report of the Department of the Interior

Annual Report of the Director of the Bureau of Standards to the Secretary of Commerce and Labor for the Fiscal Year Ended ...

Behavior and Ultimate Strength of Rectangular Reinforced Concrete Beams in Bending and High Shear

Report of the Secretary of the Interior for the Fiscal Year ...

This book deals with structural surveys for all types of building - domestic industrial and commercial - and includes diagnosis of a wide range of defects. It considers both modern and older construction methods, and deals with the particular problems of alterations and restoration work. Guidance is given on how to carry out measured surveys and on report writing. The third edition covers the latest definitions of types of property surveys, more information on report writing and a range of detail updates. * Covers all types of building - commercial, industrial and historical - not just domestic * Deals with particular problems of conversion and renovation work - increasingly important today * New edition features latest definitions of survey types, more on report writing and a range of other updates * a valuable reference book' - ASI Journal

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.

Recent Research Reports

Beams, Slabs, Columns, and Frames for Buildings

Reinforced Concrete Grade Beams, Piles & Caissons

Letter from the Secretary of Commerce Transmitting a Supplementary Report of the Highway Cost Allocation Study, Supplementing House Documents Nos. 54 and 72, 87th Congress, Pursuant to Section 210 of 70 Stat. 387, as Amended

Design Procedures for the Use of Composites in Strengthening of Reinforced Concrete Structures

The nature of this research is in advancing conventional structures and their methods of construction by exploring new technology. The formwork construction of the modern concrete structure involves the use of rigid materials such as steel and timber. This type of formwork often produces structures of forms with limited flexibility which would also hinder the even distribution of the induced stresses. To construct concrete structures with more organic forms; ones that responds to a more natural flow of the induced stresses, it is thought to be more logical to use flexible mould such as the fabric formwork. In such form-active shape the materials' utilization can be maximized and the degree of material waste can be reduced. For example, when the form responds to the externally applied loads in the way that the internally incurred stresses at any point of the body closely match the capacity of the material, then the form is material-efficient and said to be in its optimal form. The use of fabric formwork, due to its permeability can also improve the quality of concrete by eliminating any air holes on the surface, and also there are reports showing the increase in concrete's compression strength due to the reduction in water-cement ratio when cast in a fabric mould. This research concentrates on finding such material-efficient form (thus more sustainable) for reinforced concrete beam of improved material quality, through the development of the more efficient construction system of flexible fabric formwork. For this research 11 different types of beams have been built and tested in total, and their construction methods are illustrated and discussed also (Chapter 7 and Chapter 4 respectively). The designs of the beams are developed through consecutive experiment, analysis, evaluation, and modification process (Chapter 6).

For the structural analysis of the beams, the most widely accepted analysis methods are reviewed and adapted (Chapter 8). Based on the evaluations of the analytical results the following variables of the beams are modified through the development of the beam designs: The effect of Compression Steel Mesh in Flange Stress Distribution Around Anchorage; Vertical and Horizontal Web Geometry Varying Depth of Flange Steel Content Also it is a part of the current research's aim to look at the possible application of the current design methods for the design of the fabric formed beams that are discussed in this research. Thus the experimental results are compared with the results which are calculated from the standard design methods suggested by the British Standard Code of Practice (BS8110) (Chapter 9). Computational finite element (FE) analysis is carried out where more intensive analysis is required (Chapter 10). The results of the FE analysis are also compared with the theoretical and experimental results for the verification purpose. The material efficiency of the beam in its final form is assessed through the embodied energy analysis, which compares the total embodied energy consumed through the construction of the beam with a virtual beam that is designed in accordance with the BS8110 (Chapter 11). The analysis indicates that the total embodied energy of the fabric formed beam is about 20-40% less in comparison with the beam designed in accordance with the BS8110. This thesis has the purpose to illustrate and provide the practical information on the design and the construction process of the fabric formed beams, which can be used as a reference to the future research and construction.

Research Bulletin

Annual Reports of the Department of the Interior ...

Special Report - Highway Research Board

Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior

Miscellaneous Paper SL