Structural Investigation Of Historic Buildings A Case Study Guide To Preservation Technology For Buildings Bridges Towers And Mills | 47f13cd56d5cab97d664231d3e13ab19


Rehabilitation of heritage monuments provides sustainable development and cultural significance to a region. The most sensitive aspect of the refurbishment of existing buildings lies in the renovation and recovery of structural integrity and public safety. The Handbook of Research on Seismic Assessment and Rehabilitation of Historic Structures evaluates developing contributions in the field of earthquake engineering with regards to the analysis and treatment of structural damage inflicted by seismic activity. This book is a vital reference source for professionals, researchers, students, and engineers active in the field of earthquake engineering who are interested in the emergent developments and research on the presentation and rehabilitation of heritage buildings following seismic activity.Poro?ilo je uvolnili del sklopa poro?ili o numer?ihm modeliranju zgodovinskih objektov opravljenih v okviru projekta ONSITEFORMASONRY. Podan je pregled stanja na podro?iju modeliranja zidanih konstrukcij. Poro?ilo predstavlja vs? razli?nih numer?ih in analiti?nih metod za karakterizacijo in dolo?anje nosilnosti kamnitega zidovja. This book is the second in a series of volumes that combine conservation philosophy in the built environment with knowledge of traditional materials, and structural and constructional conservation techniques and technology: Understanding Historic Building Conservation Structures & Construction in Historic Building Conservation Materials & Skills for Historic Building Conservation The series aims to introduce each aspect of conservation and to provide concise, basic and up-to-date knowledge for architects, surveyors and engineers as well as for commissioning client bodies, managers and advisors. In each book, Michael Forsyth draws together chapters by leading architects, structural engineers and related professionals to reflect the interdisciplinary nature of conservation work. The books are structured to be of direct practical application, taking the reader through the process of historic building conservation and emphasising throughout the involvement of the people involved. The volumes in the series are comprehensive, and contains guidance on the survey, assessment and diagnosis of structures and the integration of building code requirements within the historic fabric. It discusses conservation engineering philosophy, exposes the conflict between building codes and conservation legislation, and offers solutions. Leading-edge, on-site metric survey techniques are described and a range of structural advice is given, including methods of repair in relation to philosophical principles. Causes of induced movement in historic buildings are explained, together with basic soil mechanics and the assessment and diagnosis of structural failure. Chapters also cover the conservation of different types of construction: masonry, iron and steel, and concrete and reinforced concrete. Fourteen chapters written by the experts present today’s key issues in structures and construction for historic building conservation: Bill Blake, Michael Russell, David Cook, Dina F. D’Ayala, Steve Emery, Michael Forsyth, Ian Hume, Peter NorrisRetrofitting of building structures, including maintenance, rehabilitation, and strengthening, is not only an important issue in urban construction and management, but also a frequent problem to structural engineers in property management disciplines. Based on the contributors’ hands-on experience, Retrofitting Design of Building Structures covers structural retrofitting practices, the basic principles of structural analysis and design, and various innovatively-used structural codes for the design, assessment, and retrofitting of building structures using newly-developed technologies worldwide. Beginning with the procedure of structural retrofitting, this book gradually introduces the significance of structural retrofitting; the inspection methods for structural materials, structural deformation, and damages; retrofitting design methods and construction requirements of various structural systems; and practical examples of structural retrofiting design and construction. In the introduction of various examples, it emphasizes not only conceptual design, but also constructional procedures. The book provides a complete and resource for experienced professionals as well as teachers and students. This is a one-stop book for knowing everything important about building structures. Self-contained and with no prerequisites needed, it is suitable for both general readers and building professionals. follow the history of structural understanding; grasp the concepts of structural behaviour via step-by-step explanations; apply these concepts to a simple building; see how these concepts apply to real buildings, from Durham Cathedral to the Bank of China; use fibre-reinforced polymer (FRP) to define the bending and tension reinforcement for modern buildings; learn to do simple but relevant numerical calculations for actual structures; understand when dynamics are important; follow the development of progressive collapse prevention; enter the world of modern structural theory; see how computers can be used for structural analysis; learn how to organise and design a successful project. With more than 500 pages and over 1100 user-friendly diagrams, this book is a must for anyone who would like to understand the fascinating world of structures. Declining church attendance has left some U.S. denominations with vacant buildings in search of new uses. The 1859 Methodist Episcopal Church in Stony Creek, New York, the subject of this thesis, is one of more than 400 churches that have been vacant for over ten years. Loss of these buildings is not simply a loss of old-fashioned or unwanted building stock—clearing away the dead wood of history—but the loss of valuable examples of our material, cultural, and spiritual history. A repurposed historic building is a living example of sustainability which informs stewardship, responsible adaptation, and a respect for endurance and the positive impact of the maturing forces of time. “With all these important reasons for building reuse, why do so many stand empty, subject to continuing deterioration, or fall prey to destructive private adaptation? The answer is complex, but key problems include lack of enlightened community planning and involvement, lack of public investment sufficient to restore and maintain these historic resources, and lack of affordable architectural design assistance to help make civic aspiration a reality. The latter reason is more important than we might...
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Read Free Structural Investigation Of Historic Buildings A Case Study Guide To Preservation Technology For Existing and Historic Buildings gives you everything that you need to succeed. This handbook holistically summarises the principles for the energy retrofitting of historic and existing buildings. For ease of use, the book is organized to parallel the structure of the IEBC itself, and the approach is cumulative, with the objective of helping old-house owners repair, restore, update, and decorate buildings of every age and architectural style. Each issue explores hands-on restoration techniques, practical architectural guidelines, historical overviews, and homeowner stories—all in a trusted, authoritative voice.A toolkit for giving our historic built environment a second life.

Conservation of our existing structures has obvious economic and social value. Moreover, historic structures provide an excellent laboratory for studying aspects of structural engineering, materials science, forensic engineering, and building design. Structural Investigation of Historic Buildings: A Case Study Guide to Preservation Technology for Buildings, Bridges, Towers, and Mills provides a practical guide for consulting structural engineers and others on dealing with issues unique to historic structures. Emphasizing structural evaluation and condition assessment based on sound preservation philosophy, but without burdening the reader with tedious calculations, the book discusses the role of the structural engineer in the evaluation and preservation process and discusses such topics as structural safety, analysis, and conservation. Engaging case studies, drawn from the author’s own practice, include: The Montague Building and Matauqa Rail The Restoration of St. Helena’s Church Market Hall Rehabilitation Differential Settment at St. Philip’s Moravian Church James Madison’s Montpelier Relocating the Cape Hatteras Lighthouse The Timber Trusses of Burr, Town, and Haupt The Cornish-Windor Covered Bridge A New Covered Bridge for Old Salem The Tohickon Aqueduct Each case study features a description of the project and its history, a condition assessment, structural analysis, discussion, recommendations, and a description of the subsequent intervention as executed with drawings and photographs. Both a foundational text for students anticipating a career in preservation and a guide for seasoned structural engineers, Structural Investigation of Historic Buildings gives preservation-minded professionals the tools they need to ensure that preservation projects and rehabilitation efforts are designed and executed to enhance The relationship between the cultural value of historic structures and the functionality of historic structures. Leading practitioners around the world have praised the book as being the most significant single volume on the subject to be published. This third edition updates and revises a classic book, including completely new sections on conservation of Modern Movement buildings and non-destructive investigation. The result of the latest edition is a manual that is a leading reference for structural engineers and architects involved in the evaluation and attention on the causes of decay and the materials they affect; and the third considers the practical role of the architect involved in conservation and rehabilitation. As well as discussing the art and science of preserving historic buildings, the book includes comprehensive sections on the history of preservation in the United States, current issues and trends in preservation, and national and international guidelines for preservation. In addition, the book includes a detailed overview of existing building investigation and condition assessment, with references to other books and articles for further reading. The book is divided into three parts: Part I: The history of conservation in the United States. This chapter provides a comprehensive overview of the history of conservation in the United States, including the development of the first conservation laws, the role of the National Park Service, and the role of the National Trust for Historic Preservation. Part II: The role of the architect in conservation. This chapter provides a comprehensive overview of the role of the architect in conservation, including the role of the architect in the evaluation and mitigation of historic properties, the role of the architect in the preservation of historic buildings, and the role of the architect in the development of conservation plans. Part III: The role of the engineer in conservation. This chapter provides a comprehensive overview of the role of the engineer in conservation, including the role of the engineer in the evaluation and mitigation of historic properties, the role of the engineer in the preservation of historic buildings, and the role of the engineer in the development of conservation plans. The book is written in a clear, concise, and practical manner, and includes numerous examples and case studies to illustrate the concepts discussed. It is an essential resource for anyone involved in the conservation of historic structures, including architects, engineers, conservators, and preservationists. It is also an excellent resource for students studying conservation, as it provides a comprehensive overview of the history, philosophy, and practice of conservation in the United States. Overall, the book is a valuable resource for anyone interested in the conservation of historic structures.
communities and nations wishing to promote their history, civilisation and aesthetic achievements. Structures built in the remote past by traditional methods have suffered the consequences of extreme loading events, such as earthquakes, for a very long time. Retrofitting is an approach based on recent technological developments and scientific knowledge, whereby modern construction methods and materials are applied to the repair and strengthening of historical structures. This book aims to inform on current retrofitting techniques, their application to various types of historical architecture and their effectiveness to fulfil their purpose. Retrofitting structural forms covered in the book vary widely from old age old places of worship, such as churches, mosques and temples, as well as castles and palaces to modern public buildings, some of them designed by well known architects. Their methods of construction range from traditional, such as stone or brick masonry to more recent textile block systems and reinforced concrete frameworks. Retrofitting is made to detailed visual inspections of damaged structure providing valuable insight into possible causes of failure; such inspections are usually combined with material characterisation which is an essential input to numerical modelling for assessing the behaviour of the structure before and after retrofitting. The book describes strengthening techniques for masonry walls including re-pointing, injection grouting and the use of steel ties. The use of reinforced concrete is proposed in the form of cast-in-place walls, jackets or tie-beams; that of carbon fibre reinforced laminates for strengthening walls and slabs. Innovative use of materials, such as self-compacting concrete or shape memory alloys is given to reduce the consequences of destructive earthquakes. Seismic energy absorbing devices and base isolation systems are two effective means of providing protection against future seismic events although their application is often met with many technical challenges in practice. Retrofitting of Heritage Structures Against Earthquakes will be of interest to members of academic institutions, government or private cultural preservation establishments and specialist consultant engineers. The book contains very practical, technical advice on many issues; this is most valuable for those interested in the conservation of historical constructions. Old houses, some of them designed by famous architects, are devoted to restoring and preserving old houses. For more than 35 years, our mission has been to help old-house owners repair, restore, update, and decorate buildings of every age and architectural style. Each issue explores hands-on restoration techniques, practical architectural guidelines, historical overviews, and homeowner stories—all in a trusted, authoritative voice. This volume contains papers presented at the Ninth International Conference on Structural Studies, Repairs and Maintenance of Heritage Architecture. The conference provides an ideal forum for professionals in the area to discuss problems and solutions, and exchange opinions and experiences. New technologies play an increasingly important role in the analysis, monitoring, restoration, and preservation of historic structures. These technological systems continue to get more advanced and complex, for example: 3D digital construction and documentation programming, 3D imaging data (including laser scanning and photogrammetry), multispectral and thermographic imaging, geophysical data, etc. This book will present the latest nondestructive technologies used in the characterization, preservation, and structural health monitoring of historic buildings. It will include numerous case studies, as well as theoretical explanations about each of the methods and technologies used in each. Historic structures need to be restored in line with international guidelines and charters developed by architects and archaeologists, but technical understanding of structural engineering and materials is crucial, particularly with respect to response to earthquake loading. This guide to structural assessment and restoration of masonry monuments and historical buildings outlines the techniques, materials and design procedures used. It begins with principles, theory and practice and then presents case studies. The assessment focuses on Building materials and construction techniques used in the past. The mechanics of masonry. The structural behaviour of masonry monuments and historical buildings. In-situ investigation and laboratory testing. Structural and restoration analysis. The restoration scheme Emergency measures and protective measures. A reference for engineers and regulatory officials involved in the preservation or restoration of buildings, or in strengthening them to meet new codes or increased load from a change of use. The treatment is suggestive rather than inclusive or prescriptive. Acidic paper. Annotation copyright Book NStructural Analysis of Historical Constructions contains about 160 papers that were presented at the IV International Seminar on Structural Analysis of Historical Constructions that was held from 10 to 13 November, 2004 in Padova Italy. Following publications of previous seminars that were organized in Barcelona, Spain (1995 and 1998) and Guimarães, Portugal (2001), state-of-the-art information is presented in these two volumes on the preservation, protection, and restoration of historical constructions, both comprising monumental structures and complete city centers. These two proceedings volumes are devoted to the possibilities of numerical and experimental techniques in the maintenance of historical structures. In this respect, the papers, originating from over 30 countries, are subdivided in the following areas: Historical aspects and general methodology, Materials and laboratory testing, Non-destructive testing and inspection techniques, Dynamic behavior and structural monitoring, Analytical and numerical approaches, Conservation of historical buildings, Renovations, strengthening and implementation, Parametrical systems, Case studies. Structural Analysis of Historical Constructions is a valuable source of information for scientists and practitioners working on structure-related issues of historical constructions. This handbook is dedicated to the conservation of stone materials by the application of polymers. A short introduction on polymer chemistry is given to highlight their characteristics and properties. After the physical and chemical attributes of stone are summarised, the problems related to its degradation are discussed. Finally, some common misrepresentations of the various advantages and disadvantages of polymers for stone conservation are questioned, and some suggestions are provided. This handbook will be of great interest to those who share the author’s enthusiasm for stone artwork and her dedication to their restoration and conservation. This publication provides civil engineers with the background and guidance necessary to conduct engineering damage investigations of structures following hurricanes, focusing particularly on distinguishing between wind damage and water damage. The tragic events of September 11, 2001, have forever changed the lives of the individuals and families that were directly affected and have had a long-lasting history of structural engineering for emergency- or emergency- or safety-related events. It is to investigate the condition of the buildings remaining at the World Trade Center site, to work with the rescue and clean-up crews in evaluating the safety of the towering piles of rubble, and to try to explain what happened to the buildings as they collapsed. After 9-11 describes one engineer's experiences on site and off as part of that effort. This book reports on an architectural conservation and reuse project in Ani, an Armenian Soviet-era village on the Turkish border, just a few steps away from the important Yerevan area. It is based on cradle-to-cradle thinking and focuses on the story for over a century of the 14 people who have lived in the village. In 2001, a group of Armenian-American engineers and architects and non-governmental organisations (NGO) came to the village and reconstructed numerous cultural resources and preserve the memory of the village that housed the genocide orphanages and the many other stories associated with the village. Further, the development of sustainable tourism will lead to an improved relationship between locals and visitors. Examining the development of a system of strategies able to cope with the existing social, economic and hygiene problems as well as the architectural preservation aims, the book provides valuable guidelines for the local community. Structural Analysis of Historical Constructions: Anamnesis, diagnosis, therapy, controls contains the papers presented at the 10th International Conference on Structural Analysis of Historical Constructions that was held from 13-15 September 2006, Leuven, Belgium. The conference emphasises the importance of each of the steps of a restoration process in order to obtain a thorough understanding of the structural behaviour of built cultural heritage. The contributions cover every aspect of the structural analysis of historical constructions, such as material characterization, structural modelling, static and dynamic monitoring, non-destructive techniques for on-site investigation, seismic behaviour, rehabilitation, traditional and innovative repair techniques, and case studies. A special focus has been put on six specific themes: - Innovation and heritage - Preventive conservation - Computational strategies for heritage structures - Sustainable strengthening of masonry with composites - Values and
Structural Analysis of Historic Buildings is an invaluable structural handbook. Explains the purpose of historic structure reports, describes their value to the preservation of significant historic properties, outlines how reports are commissioned and prepared, and recommends an organizational format for such reports. This volume contains papers presented at the Twelfth International Conference on Structural Studies, Repairs and Maintenance of Heritage Architecture. The conference provides an ideal forum for professionals in the area to discuss problems and solutions, and exchange opinions and experiences. Provides guidance to historic building owners and building managers, preservation consultants, architects, contractors, and project reviewers prior to treatment of historic buildings. Since its publication in 1982 Sir Bernard Feilden’s Conservation of Historic Buildings has become the standard text for architects and others involved in the conservation of historic structures. Leading practitioners around the world have praised the book as being the most significant single volume on the subject to be published. This third edition revises and updates a classic book, including completely new sections on conservation of Modern Movement buildings and non-destructive investigation. The result of the lifetime’s experience of one of the world’s leading architectural conservators, the book comprehensively surveys the fundamental principles of conservation in their application to historic buildings, and provides the basic information needed by architects, engineers and surveyors for the solution of problems of architectural conservation in almost every climatic region of the world. This edition is organized into three complementary parts: in the first the structure of buildings is dealt with in detail; the second focuses attention on the causes of decay and the materials they affect; and the third considers the practical role of the architect involved in conservation and rehabilitation. As well as being essential reading for architects and others concerned with conservation, many lay people with various kinds of responsibility for historic buildings will find this clearly written, jargon-free work a fruitful source of guidance and information.

Community and federal involvement—Selecting a moving contractor—Specifications and licenses—Selecting the best procedure for the move—Planning a route—Documentation—Interim protection prior to the move—Selecting and preparing the new site—Preparing the structure for the move—Conclusion—Case study: Relocation of the Gruber Wagon Works. 

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