

Pile Cap Design Detail

Pile caps are used in foundation design to aid multiple single piles to act as a pile group to resist lateral forces that may cause overturning moments. The pile cap and pile group resist these forces by pile-soil-pile interaction, base and side friction along the pile cap-backfill interface, and passive earth resistance. Passive earth resistance has been neglected in design due to a limited amount of full-scale testing.

*This Book Systematically Explains The Basic Principles And Techniques Involved In The Design Of Reinforced Concrete Structures. It Exhaustively Covers The First Course On The Subject At B.E./ B.Tech Level.Important Features: * Exposition Is Based On The Latest Indian Standard Code Is: 456-2000. * Limit State Method Emphasized Throughout The Book. * Working Stress Method Also Explained. * Detailing Aspects Of Reinforcement Highlighted. * Incorporates Earthquake Resistant Design. * Includes A Large Number Of Solved Examples, Practice Problems And Illustrations.The Book Would Serve As A Comprehensive Text For Undergraduate Civil Engineering Students. Practising Engineers Would Also Find It A Valuable Reference Source.*

This book presents a collection of recent research works related to blast resistant design, building pathologies, seismic coating, bottle-shaped concrete struts, delayed ettringite formation and waterproofing. It features eight chapters on building pathologies as well as a detailed set of references and suggestions for further reading. Offering a systematic review of the current state of knowledge, it is a valuable resource for scientists, students, practitioners, and lecturers in various scientific and engineering disciplines, including civil and materials engineering, as well as and other interested parties.

This new edition of a highly practical text gives a detailed presentation of the design of common reinforced concrete structures to limit state theory in accordance with BS 8110.

Pile Design and Construction Practice

Basics of Foundation Design

Futures in Mechanics of Structures and Materials

Design Guide for Pile Caps-AASHTO

Reinforced and Prestressed Concrete

Cylinder Pile Cap Design & Work Plan

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 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 students, and practitioners in various scientific and engineering disciplines, namely, civil and materials engineering, as well as and other interested parties.

The authoritative industry guide on good practice for planning and scheduling in construction This handbook acts as a guide to good practice, a text to accompany learning and a reference document for those needing information on background, best practice, and methods for practical application. A Handbook for Construction Planning & Scheduling presents the key issues of planning and programming divided into four main sections: Planning and Scheduling within the Construction Context; Planning and Scheduling Techniques and Practices; Planning and Scheduling Methods; Delay and Forensic Analysis. The authors include both basic concepts and updates on current topics demanding close attention from the construction industry, including planning for sustainability, waste, health and safety for early career practitioners - engineers, quantity surveyors, construction managers, project managers - who may already have a basic grounding in civil engineering, building and general construction but lack extensive planning and scheduling experience. Students will find the website helpful with worked examples of the methods and calculations for typical construction projects plus other direct planning and scheduling in construction is written in a direct, informative style with a clear presentation enabling easy access of the relevant information with a companion website providing additional resources and learning support material. the authoritative industry guide on construction planning and scheduling direct informative writing style and clear presentation enables easy access of the material.

A basal reinforced piled embankment consists of a reinforced embankment on a pile foundation. The reinforcement consists of one or more horizontal layers of geosynthetic reinforcement installed at the base of the embankment. A basal reinforced piled embankment can be used for the construction of a road or a railway when a traditional construction method would require too much construction making frequent maintenance necessary. This publication is a guideline (CUR226) for the design of basal reinforced piled embankments. The guideline covers the following subjects: a survey of the requirements and the basic principles for the structure as a whole; some instructions for the pile foundation and the pile caps; design rules for the embankment with the basal geosynthetic reinforcement details and management and maintenance of the piled embankment. The guideline includes many practical tips. The design guideline is based on state-of-the-art Dutch research, which was conducted in cooperation with many researchers from different countries.

This book comprises select proceedings of the annual conference of the Indian Geotechnical Society. The conference brings together research and case histories on various aspects of geotechnical and geoenvironmental engineering. The book presents papers on geotechnical applications and case histories, covering topics such as (i) Characterization of Geomaterials and Physical Modelling; (ii) Foundation Improvement; (iv) Geoenvironmental Engineering and Waste Material Utilization; (v) Soil Dynamics and Earthquake Geotechnical Engineering; (vi) Earth Retaining Structures, Dams and Embankments; (vii) Slope Stability and Landslides; (viii) Transportation Geotechnics; (ix) Geosynthetics Applications; (x) Computational, Analytical and Numerical Modelling; (xi) Rock Engineering, Tunneling and Underground Case Studies; and (xiii) Others Topics: Behaviour of Unsaturated Soils, Offshore and Marine Geotechnics, Remote Sensing and GIS, Field Investigations, Instrumentation and Monitoring, Retrofitting of Geotechnical Structures, Reliability in Geotechnical Engineering, Geotechnical Education, Codes and Standards, and other relevant topics. The contents of this book are of interest to researchers and Proceedings of the 18th Australasian Conference on the Mechanics of Structures and Materials, Perth, Australia, 1-3 December 2004, Two Volume Set

Reinforced Concrete

Design Guide for AASHTO Pile Caps

An Introduction to Design Procedure for Pile Foundations

Building Code Requirements for Structural Concrete (ACI 318-05) and Commentary (ACI 318R-05)

IGC-2019 Volume III

This book is intended to serve as a textbook for engineering courses on earthquake resistant design. The book covers important attributes for seismic design such as material properties, damping, ductility, stiffness and strength. The subject coverage commences with simple concepts and proceeds right up to nonlinear analysis and push-over method for checking building adequacy. The book also provides an insight into the design of base isolators highlighting their merits and demerits. Apart from the theoretical approach to design of multi-storey buildings, the book highlights the care required in practical design and construction of various building components. It covers modal analysis in depth including the important missing mass method of analysis and tension shift in shear walls and beams. These have important bearing on reinforcement detailing. Detailed design and construction features are covered for earthquake resistant design of reinforced concrete as well as confined and reinforced masonry structures. The book also provides the methodology for assessment of seismic forces on basement walls and pile foundations. It provides a practical approach to design and detailing of soil stores, short columns, vulnerable staircases and many other components. The book bridges the gap between design and construction. Plenty of worked illustrative examples are provided to aid learning. This book will be of value to upper undergraduate and graduate students taking courses on seismic design of structures.

A textbook for BINC/CHND students of civil engineering. Covers contract administration, control and programming, safety, ground water control, excavation, foundations, retaining walls and deep basements, superstructures and road pavements.

Pile caps are structural elements used to transmit loads from structural columns into pile groups. A pile cap is generally constructed of reinforced concrete and contains only minimal flexural reinforcing steel. Using modern design methods, the anchorage of the flexural steel may limit the design capacity of existing pile caps. To develop new data on performance of existing pile caps with poorly detailed flexural reinforcing steel, four pile cap specimens were constructed and tested. The specimens were full-size representations of in-situ pile caps used in a mid-rise hospital building. Materials used to construct the specimens were selected to represent those of the in-situ pile caps. Tests were conducted until failure or the maximum capacity of the hydraulic loading system was achieved. Design methods were used to compare the predicted design strength with the measured experimental strength of the specimens. Based on the observed experimental response, specimens exhibited either two-way punching shear or one-way shear failure modes. Widespread yielding and little relative slip of the embedded reinforcing steel were observed. The modern design methods were sometimes conservative and sometimes unconservative in predicting the strength of the specimens.

Design Guide for Pile CapsA Detailed Guide Providing a Comprehensive Overview of Pile Cap Design, Detailing and Analysis Methodologies

Livingston Rail Yard, Livingston, Montana

Idealization of Pile to Pile-cap Connection with Respect to Lateral Loads

Proceedings of the Indian Geotechnical Conference 2019

Developments in Mechanics of Structures & Materials

Masonry: Building Pathologies and Design

Piles and Pile Foundations

The "Red Book" presents a background to conventional foundation analysis and design. The text is not intended to replace the much more comprehensive 'standard' textbooks, but rather to support and augment these in a few important areas, supplying methods applicable to practical cases handled daily by practising engineers and providing the basic soil mechanics background to those methods. It concentrates on the static design for stationary foundation conditions. Although the topic is far from exhaustively treated, it does intend to present most of the basic material needed for a practising engineer involved in routine geotechnical design, as well as provide the tools for an engineering student to approach and solve common geotechnical design problems.

An unbiased, comprehensive review of helical pile technology andapplications Helical piles have risen from being merely an interestingalternative for special cases to a frequently requested, morewidely accepted deep foundation adopted into the 2009 InternationalBuilding Code. The first alternative to manufacturer-producedmanuals, Howard Perko's Helical Piles: A Practical Guide toDesign and Installation answers the industry's need for anunbiased and universally applicable text dedicated to the designand installation of helical piles, helical piers, screw piles, andtorque anchors. Fully compliant with ICC-Evaluation Services, Inc.,Acceptance Criteria for Helical Foundation Systems andDevices (AC308), this comprehensive reference guidesconstruction professionals to manufactured helical pile systems andtechnology, providing objective insights into the benefits ofhelical pile foundations over driven or cast foundation systems, and recommending applications where appropriate. After introducingthe reader to the basic features, terminology, history, and modernapplications of helical pile technology, chapters discuss: Installation and basic geotechnics Bearing and pullout capacity Capacity verification through torque Axial load testing Reliability, and sizing Expansive soil and lateral load resistance Corrosion and life expectancy Foundation, earth retention, and underpinning systems Foundation economics Select proprietary systems IBC and NYC Building codes Covering such issues of concern as environmental sustainability, Helical Piles provides contractors and engineers as well as students in civil engineering with a practical, real-world guide tothe design and installation of helical piles.

Written to Eurocode 7 and the UK National AnnexUpdated to reflect the current usage of Eurocode 7, along with relevant parts of the British Standards, Pile Design and Construction Practice, Sixth Edition maintains the empirical correlations of the original-combining practical know how with scientific knowledge-and emphasizing relevant principles an

Pile foundations are the most common form of deep foundations that are used both onshore and offshore to transfer large superstructural loads into competent soil strata. This book provides many case histories of failure of pile foundations due to earthquake loading and soil liquefaction. Based on the observed case histories, the possible mechanisms of failure of the pile foundations are postulated. The book also deals with the additional loading attracted by piles in liquefiable soils due to lateral spreading of sloping ground. Recent research at Cambridge forms the backbone of this book with the design methodologies being developed directly based on quantified centrifuge test results and numerical analysis.The book provides designers and practicing civil engineers with a sound knowledge of pile behaviour in liquefiable soils and easy-to-use methods to design pile foundations in seismic regions. For graduate students and researchers, it brings together the latest research findings on pile foundations in a way that is relevant to geotechnical practice.

Seismic Design of RC Buildings

Behavior and Analysis of Pile Caps with Poor Anchorage Details

Design and Reanalysis of Pile Cap Due to Pile Eccentricity

Design Guideline Basal Reinforced Piled Embankments

Behaviour and Design of Pile Caps with Four Piles

Design of Foundation Systems

Here is a comprehensive guide and reference to assist civil engineers preparing for the Structural Engineer Examination. It offers 350 pages of text and 70 design problems with complete step-by-step solutions. Topics covered: Materials for Reinforced Concrete; Limit State Principles; Flexure of Reinforced Concrete Beams; Shear and Torsion and Anchorage; Design of Reinforced Concrete Columns; Design of Reinforced Concrete Slabs and Footings; Retaining Walls; and Piled Foundations. An index is provided.

Designed primarily as a text for the undergraduate students of civil engineering, this compact and well-organized text presents all the basic topics of reinforced concrete design in a comprehensive manner. The text conforms to the limit states design method as given in the latest revision of Indian Code of Practice for Plain and Reinforced Concrete. The book covers the applications of design concepts and provides a wealth of state-of-the-art information on design aspects of wide variety of reinforced concrete structures. However, the emphasis is on modern design approach. The text attempts to: • Present simple, efficient and systematic procedures for evolving design of concrete structures • Provide field tested practical data in the appendices. • Provide time saving analysis and design aids in the form of tables and charts. • Cover a large number of worked-out practical design examples and problems in each chapter. • Emphasize on development of structural sense needed for proper detailing of steel for integrated action in

Besides students, practicing engineers and architects would find this text extremely useful.

Reinforced and Prestressed Concrete is the most comprehensive, up-to-the-minute text for students and instructors in civil and structural engineering, and for practising engineers requiring a full grasp of the latest Australian Concrete Structures Standard, AS3600-2009. Topics are presented in detail, covering the theoretical and practical design with an emphasis on the application of AS3600-2009. The first major national code to embrace the use of high-strength concrete of up to 100 MPa, the latest Standard also includes major technological upgrades, new analysis and design formulas, and new and more elaborate processes. This text addresses all such advances, and features torsion, bond, deflection and cracking, beams, slabs, columns, walls, footings, pile caps and retaining walls, as well as prestressed beams and end blocks plus an exposition on strut-and-tie modelling.

This international handbook is essential for geotechnical engineers and engineering geologists responsible for designing and constructing piled foundations. It explains general principles and practice and details current types of pile, piling equipment and methods. It includes calculations of the resistance of piles to compressive loads, pile group

An Introduction to Analysis and Design of Pile Foundations

Helical Piles

A Detailed Guide Providing a Comprehensive Overview of AASHTO Pile Cap Design, Detailing, and Analysis Methodologies Meeting Current Codes and Standards

Principles and Practices

DESIGN OF REINFORCED CONCRETE STRUCTURES

I. Standard Details for Pile Caps; II. Standard Specifications for Concrete Piles; III. Concrete Vs. Wooden Piles, a Comparison of Costs; IV. Method of Testing a Concrete Pile; V. How a Pile Supports Its Load (Classic Reprint)

This thesis is concerned with study of behavior of pile to pile-cap connection with respect to lateral loads. In this connection prestressed precast concrete piles and reinforced concrete pile caps were given particular attention. General parameters for the design of pile-pile cap connection are discussed with reference to ACI Code and New Zealand Code. Seismic design philosophies for prestressed concrete pile and reinforced concrete pile cap connections are given in the summary form. A review of the previous works concerning pile-pile cap connections is given along with comments. The properties of main materials, ie, concrete and steel are discussed, elaborating their physical models. Analytical models for analysis are discussed with a short review of the analytical as well as mathematical models for concrete and steel. Reinforced concrete models are discussed for the finite element method of analysis. Seismic design methodology for bridge piers is discussed in order to develop understandings of the possible origins and effects of the lateral loads on the pile-pile cap connections. Design of reinforced concrete pile cap is discussed along with assumptions, design steps and explanatory examples according to ACI Code as well as New Zealand Code. Six pile-pile cap connections are modelled incorporating the improved material properties as well as detailing of reinforcement. The analysis of these models is carried out by the finite element method, using 'ABAQUS' program, and the results are compared with the experimental results. The proposed models have shown satisfactory results in most of the areas. There are valuable indications of requirements for further research in some areas. Finally, a number of recommendations are offered on the basis of the observations made and conclusions drawn during this study. Recommendations are also made for areas demanding further research for better understanding of the behavior of pile-pile cap connections. Comments are offered about 'ABAQUS' for the aspects which demand further elaboration for better understanding and convenient application of the program.

This work is intended to provide the practicing engineer with a detailed overview of pile cap design, detailing, and analysis methodologies that in accordance with the 2014 AASHTO LRFD Bridge Design Specifications (AASHTO)

In Foundation Design: Theory and Practice, Professor N. S. V. Kameswara Rao covers the key aspects of the subject, including principles of testing, interpretation, analysis, soil-structure interaction modeling, construction guidelines, and applications to rational design. Rao presents a wide array of numerical methods used in analyses so that readers can employ and adapt them on their own. Throughout the book the emphasis is on practical application, training readers in actual design procedures using the latest codes and standards in use throughout the world. Presents updated design procedures in light of revised codes and standards, covering: American Concrete Institute (ACI) codes Eurocode 7 Other British Standard-based codes including Indian codes Provides background materials for easy understanding of the topics, such as: Code provisions for reinforced concrete Pile design and construction Machine foundations and construction practices Tests for obtaining the design parameters Features subjects not covered in other foundation design texts: Soil-structure interaction approaches using analytical, numerical, and finite element methods Analysis and design of circular and annular foundations Analysis and design of piles and groups subjected to general loads and movements Contains worked out examples to illustrate the analysis and design Provides several problems for practice at the end of each chapter Lecture materials for instructors available on the book's companion website Foundation Design is designed for graduate students in civil engineering and geotechnical engineering. The book is also ideal for advanced undergraduate students, contractors, builders, developers, heavy machine manufacturers, and power plant engineers. Students in mechanical engineering will find the chapter on machine foundations helpful

This textbook first published in 1992 now appearing in its third edition retains the best features from the earlier editions and adds significantly to the contents, which include developments in the 1990s.

A Detailed Guide Providing a Comprehensive Overview of Pile Cap Design, Detailing and Analysis Methodologies

Concrete Pile Standards

Pile Foundation Design for Shear Wall with Coupling Beams

Reinforced Concrete Design: Principles And Practice

Analysis and Design with Emphasis on Application of AS3600-2009

A Detailed Guide Providing a Comprehensive Overview of AASHTO Pile Cap Design, Detailing and Analysis Methodologies

A detailed guide providing a comprehensive overview of pile cap design, detailing and analysis methodologies

Introductory technical guidance for civil and geotechnical engineers and construction managers interested in design and construction of pile supported foundations. Here is what is discussed: 1. GENERAL 2. DESIGN CRITERIA 3. PILE CAPACITY 4. SETTLEMENT 5. PILE GROUP ANALYSIS.

Pile Design and Construction Rules of Thumb presents Geotechnical and Civil Engineers a comprehensive coverage of Pile Foundation related theory and practice. Based on the author 's experience as a PE, the book brings concise theory and extensive calculations, examples and case studies that can be easily applied by professional in their day-to-day challenges. In its first part, the book covers the fundamentals of Pile Selection: Soil investigation, condition, pile types and how to choose them. In the second part it addresses the Design of Pile Foundations, including different types of soils, pile groups, pile settlement and pile design in rock. Next, the most extensive part covers Design Strategies and contains chapters on loading analysis, load distribution, negative skin friction, design for expansive soils, wave equation analysis, batter piles, seismic analysis and the use of softwares for design aid. The fourth part covers Construction Methods including hammers, inspection, cost estimation, load tests, offshore piling, beams and caps. In this new and updated edition the author has incorporated new pile designs such as helical, composite, wind turbine monopiles, and spiral coil energy piles. All calculations have been updated to most current materials characteristics and designs available in the market. Also, new chapters on negative skin friction, pile driving, and pile load testing have been added. Practising Geotechnical, and Civil Engineers will find in this book an excellent handbook for frequent consult, benefiting from the clear and direct calculations, examples, and cases. Civil Engineering preparing for PE exams may benefit from the extensive coverage of the subject. Convenient for day-to-day consults; Numerous design examples for sandy soils, clay soils, and seismic loadings; Now including helical, composite, wind turbine monopiles, and spiral coil energy piles; Methodologies and case studies for different pile types; Serves as PE exam preparation material.

This volume contains the peer-reviewed papers accepted for presentation at the 18th Australasian Conference on the Mechanics of Structures and Materials held in Perth, 2004. Papers contained describe significant advances in a large number of diverse areas, indicating the range of applications of the basic principles and techniques of mechanics from traditional areas such as steel and concrete structures, through to modern areas such as structural health monitoring and structural rehabilitation using carbon fibre composites. With topics ranging from foundation piles to shaken baby syndrome, this volume reports the results of countless thousands of hours of research and millions of dollars of research funding.

Structural Design Guide to the ACI Building Code

Pile Cap Design for H-pile Foundations

Foundation Design

Civil Engineering Construction Design and Management

Pile Design and Construction Rules of Thumb

Futures in Mechanics of Structures and Materials is a collection of peer-reviewed papers presented at the 20th Australasian Conference on the Mechanics of Structures and Materials (ACMSM20, University of Southern Queensland, Toowoomba, Queensland, Australia, 2 - 5 December 2008) by academics, researchers and practicing engineers mainly from Austral

Piled foundations are generally designed using empirical methods, in particular the traditional capacity based approach on which the majority of codes of practice are based. However in recent years the analysis of pile groups and piled rafts has undergone substantial development in the light of new research and the mechanisms for the interactions b

Excerpt from Concrete Pile Standards: I. Standard Details for Pile Caps; II. Standard Specifications for Concrete Piles; III. Concrete Vs. Wooden Piles, a Comparison of Costs; IV. Method of Testing a Concrete Pile; V. How a Pile Supports Its Load Concrete piles were first driven in this country about twelve years ago and since then their use has been widespread and increasing. Almost without exception where they have been used the design has also included concrete or reinforced concrete caps for these piles. It is a matter for surprise that, until now, no one has attempted to formulate and present for the consideration of engineers a proposed Standard Design for reinforced concrete pile caps. About the Publisher Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally reconstruct the work, preserving the original format whilst repairing imperfections present in the aged copy. In rare cases, an imperfection in the original, such as a blemish or missing page, may be replicated in our edition. We do, however, repair the vast majority of imperfections successfully; any imperfections that remain are intentionally left to preserve the state of such historical works.

The reinforced concrete shear wall is one of the most commonly used lateral load resisting structural components in reinforced concrete buildings. The purpose of this study is to analyze two independent shear walls connected with coupling beams in the presence of lateral loads. When a lateral load acts on one side of the shear walls, due to the highly rigid nature of adjacent shear walls, most of the stress concentrated on the foundation beam and coupling beams. Different types of pile cap and different batter pile arrangement could affect the strength of the overall structure. This study is focused on the investigation of the behavior of the pile foundation for the seismic force-resisting system with shear walls and coupling beams. A total of 18 variety of computer models with different types of pile caps and different batter pile arrangements are used for the seismic analysis. The results reveal that the type of pile caps and the arrangement of batter piles greatly affect the magnitude of the axial force distributed to each pile.

Reinforced Concrete Designer's Handbook

A Practical Guide to Design and Installation

Design Guide for Pile Caps

Design of Pile Foundations in Liquefiable Soils

Design of Reinforced Concrete Structures

Diagnostic of Concrete Samples Affected by Internal Swelling Reactions

Introductory technical guidance for civil, structural and geotechnical engineers interested in design and construction of pile foundations. Here is what is discussed: 1. GENERAL 2. SELECTION OF PILE-SOIL MODEL 3. SELECTION OF PILE STRUCTURE MODEL 4. FINAL LAYOUT 5. DESIGN OF PILE CAP 6. SPECIAL CONSIDERATIONS.

This extensively revised and updated fourth edition provides engineers with the principles and tools needed to turn their familiarity with earlier ACI Codes into more profitable, time-saving routine designs. Created to be used with the ACI Code and Commentary, this outstanding guide follows the new Code format with information covered in more specific sections and subsections in order to enhance clarity. In addition, it shortens the time needed for computer-aided design and analysis, converts code formulas from the review form to direct design, and presents simple formulas, tabulations, and charts for conservative longhand direct design. Two convenient indices - a subject index and a 1995 Code section index - are provided, enabling engineers to quickly locate all Code references to a particular topic, as well as concise interpretation of a given Code section. The

Guide also saves engineers time and effort on the job with its detailed coverage of: torsional stiffness, braced and unbraced slender columns with and without sidesway, wide-module joist systems, reinforcement details for economy in design, detailing, fabricating, field erection, and inspection, latest ASTM material specifications, anchorage, development, and splice requirements, high-strength concrete, comparisons between wall and column economy, structural plain concrete. More than ever, the sure-handed Structural Design Guide to the ACI Building Code is an indispensable practical reference for structural, civil, and architectural engineers and students who want to safely meet modern building requirements while taking full advantage of every economy permitted by the 1995 ACI Code.

Dynamic Full-scale Testing of a Pile Cap with Loose Silty Sand Backfill

Handbook for Construction Planning and Scheduling

Theory and Practice

Design theory and examples