

Henry Joseph E. Bowles Z. Ba ant Sharat Chandra Gupta Z. Bazant United States. Army. Corps of Engineers

this guide combines soil engineering principles design information and construction details it introduces basic theory and then by means of case studies practical worked examples and design charts develops an understanding of foundation design and construction methods

foundation design discusses fundamental concepts in the design of foundations as with the author s previous work the aj handbook of building structure the emphasis is on practical matters and while every architect may not aspire to more complicated designs with the aid of this book he will be able to talk with more authority to his engineer the book begins with an introduction to the properties rocks and soils including sands and gravels clays and silts and peat this is followed by discussions of the site investigation process soil mechanics and the principles of foundation design separate chapters cover foundation types spread foundations and piles foundation hazards and construction problems and underpinning examples of foundation design are presented such as simple bases a column on the edge of a building and examples of piling the final two chapters discuss specifications for mass bases reinforced pads and trench foundations and pile caps information to be given when inviting piling tenders and the supervision of site works

for graduate and undergraduate courses in foundation engineering understanding and practicing foundation design principles foundation design principles and practices includes the most noteworthy research and advancements in foundation engineering following a systematic approach of identifying major concepts followed by strategic analysis and design the third edition teaches readers not only how to understand foundation engineering but to apply it to real problems the highly up to date material places great emphasis on limit state design and includes a new focus on load and resistance factor design in both the structural and geotechnical aspects of the process

this manual for civil and structural engineers aims to simplify as much as possible a complex subject which is often treated too theoretically by explaining in a practical way how to provide uncomplicated buildable and economical foundations it explains

simply clearly and with numerous worked examples how economic foundation design is achieved it deals with both straightforward and difficult sites following the process through site investigation foundation selection and finally design the book includes chapters on many aspects of foundation engineering that most other books avoid including filled and contaminated sites mining and other man made conditions features a step by step procedure for the design of lightweight and flexible rafts to fill the gap in guidance in this much neglected yet extremely economical foundation solution concentrates on foundations for building structures rather than the larger civil engineering foundations includes many innovative and economic solutions developed and used by the authors practice but not often covered in other publications provides an extensive series of appendices as a valuable reference source for the second edition the chapter on contaminated and derelict sites has been updated to take account of the latest guidelines on the subject including BS 10175 elsewhere throughout the book references have been updated to take account of the latest technical publications and relevant British standards

one of the core roles of a practising geotechnical engineer is to analyse and design foundations this textbook for advanced undergraduates and graduate students covers the analysis design and construction of shallow and deep foundations and retaining structures as well as the stability analysis and mitigation of slopes it progressively introduces critical state soil mechanics and plasticity theories such as plastic limit analysis and cavity expansion theories before leading into the theories of foundation lateral earth pressure and slope stability analysis on the engineering side the book introduces construction and testing methods used in current practice throughout it emphasizes the connection between theory and practice it prepares readers for the more sophisticated non linear elastic plastic analysis in foundation engineering which is commonly used in engineering practice and serves too as a reference book for practising engineers a companion website provides a series of excel spreadsheet programs to cover all examples included in the book and powerpoint lecture slides and a solutions manual for lecturers using excel the relationships between the input parameters and the design and analysis results can be seen numerical values of complex equations can be calculated quickly non linearity and optimization can be brought in more easily to employ functional numerical methods and sophisticated methods can be seen in practice such as p y

curve for laterally loaded piles and flexible retaining structures and methods of slices for slope stability analysis

one of a kind coverage on the fundamentals of foundation analysis and design analysis and design of shallow and deep foundations is a significant new resource to the engineering principles used in the analysis and design of both shallow and deep load bearing foundations for a variety of building and structural types its unique presentation focuses on new developments in computer aided analysis and soil structure interaction including foundations as deformable bodies written by the world s leading foundation engineers analysis and design of shallow and deep foundations covers everything from soil investigations and loading analysis to major types of foundations and construction methods it also features coverage on computer assisted analytical methods balanced with standard methods such as site visits and the role of engineering geology methods for computing the capacity and settlement of both shallow and deep foundations field testing methods and sample case studies including projects where foundations have failed supported with analyses of the failure cd rom containing demonstration versions of analytical geotechnical software from ensoft inc tailored for use by students in the classroom

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 for structural engineering applications companion website for instructor resources wiley.com/go/rao

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

using a design oriented approach that addresses geotechnical structural and construction aspects of foundation engineering this book explores practical methods of designing structural foundations while emphasizing and explaining how and why foundations behave the way they do it explains the theories and experimental data behind the design procedures and how to apply this information to real world problems covers general principles performance requirements soil mechanics site exploration and characterization shallow foundations bearing capacity settlement spread footings geotechnical design spread footings structural design mats deep foundations axial load capacity full scale load tests static methods dynamic methods lateral load capacity structural design special topics foundations on weak and compressible soils foundation on expansive soils foundations on collapsible soils and earth retaining structures lateral earth pressures cantilever retaining walls sheet pile walls soldier pile walls internally stabilized earth retaining structures for

geotechnical engineers soils engineers structural engineers and foundation engineers

theory of vibrations wave propagation in an elastic medium dynamic soil properties unbalanced forces for design of machine foundations foundations for reciprocating machines foundations for impact machines foundations for high speed rotary machines foundations for miscellaneous types of machines vibration absorption and isolation dynamic response of embedded block foundations machine foundations on piles case histories construction of machine foundations computer program for the design of a block foundation computer program for the design of a hammer foundation brief description of some available computer programs computation of moment of inertia conversion factors

the behaviour of foundation is closely interlinked with the behaviour of soil supporting it this book develops a clear understanding of the soil parameters bearing capacity settlement and deformation and describes the practical methods of designing structural foundations the book analyses the various types of foundations namely isolated footing strip foundation and raft foundation and their structural design it discusses piled foundation the types and behaviour of piles in various soils cohesive and cohesionless and their bearing capacity the book also includes the analysis design and construction of diaphragm wall foundation used in highway and railway tunnels multi storey basement and underground metro stations in addition it includes the analysis and design of sheet piling foundation retaining wall and bridge pier foundation key features demonstrates both bs codes of practice and eurocodes to analyse soil and structural design of foundations and compares the results includes a number of examples on foundations provides structural design calculations with step by step procedures gives sufficient numbers of relevant sketches figures and tables to reinforce the concepts this book is suitable for the senior undergraduate students of civil engineering and postgraduate students specializing in geotechnical engineering besides practising engineers will also find this book useful

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

the objectives of this text are to complement theoretical expressions with practical applications based on the author's experience and to introduce new materials geosynthetics geoenvironmental design case studies and methodologies for analysis and testing the book contains a balanced correlation of theory and practice numerous example problems and extensive use of si units

the revision of this best selling text for a junior senior course in foundation analysis and design now includes an ibm computer disk containing 16 compiled programs together with the data sets used to produce the output sheets as well as new material on sloping ground pile and pile group analysis and procedures for an improved analysis of lateral piles bearing capacity analysis has been substantially revised for footings with horizontal as well as vertical loads footing design for overturning now incorporates the use of the same uniform linear pressure concept used in ascertaining the bearing capacity increased emphasis is placed on geotextiles for retaining walls and soil nailing copyright libri gmbh all rights reserved

methods of foundation engineering covers the theory analysis and practice of foundation engineering as well as its soil mechanics and structural design aspects and principles the book is divided into five parts encompassing 21 chapters part a is of an introductory character and presents a brief review of the various types of foundation structures used in civil engineering and their historical development part b provides the theoretical fundamentals of soil and rock mechanics which are of importance for foundation design part c deals with the design of the footing area of spread footings and discusses the shallow foundation methods part d describes the methods of deep foundations while part e is devoted to special foundation methods each chapter in parts c to e starts with an introduction containing a synopsis of the matter being discussed and giving suggestions as to the choice of a suitable method of foundation this is followed by a description of the methods generally used in practice simple analyses of structures presented at the conclusion of each chapter can be carried out by a pocket calculator this book will prove useful to practicing civil and design engineers

available textbooks handbooks various publications and papers give widely different

approaches for design of raft foundations these approaches make their own assumptions and deal with ideal raft symmetrical in shape and loading in actual practice rafts are rarely so a structural designer engaged in the design of raft foundations finds it hard to select the method that can be carried out within the time and cost available for design and give adequate safety and economy this book covers complete design of raft foundations including piled rafts starting from their need type all the approaches suggested so far in published literature effect of assumptions made and values of variables selected on the design values of stresses and brings out the limitations of these approaches using actually constructed rafts results of studies carried out by the author are summarised and final recommendations given solved examples are included for each of the methods recommended comprehensive treatment of the subject makes the book helpful to the design engineers engineering teachers students and even those who are engaged in further research

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