Civil Engineering Construction Management

This book gathers peer-reviewed contributions presented at the 1st International Conference on Structural Engineering and Construction Management (SECON’20), held in Angamaly, Kerala, India, on 14-15 May 2020. The meeting served as a fertile platform for discussion, sharing sound knowledge and introducing novel ideas on issues related to sustainable construction and design for the future. The respective contributions address various aspects of numerical modeling and simulation in structural engineering, structural dynamics and earthquake engineering, and other research topics, which are also related to concrete structures and construction management practices.

The book is divided into eight sections, covering topics such as advanced numerical analysis and design for structures, building energy management, and technical project management. Accordingly, the book offers a valuable, up-to-date tool and essential overview of the subject for scientists and practitioners alike, and will inspire further investigations and research.

The book is expected to provide significant information and guidelines to construction and project management professionals, including owners, designers, consultants, construction managers, project managers, supervisors, contractors, builders, developers, and many others from the construction-related industries involved in construction projects (mainly civil construction projects, commercial-A/E projects) and construction-related industries. It covers the importance of construction management principles, procedures, concepts, methods, and tools, and their applications to various activities/components/subsystems of different phases of the life cycle of a construction project. These applications will improve the construction process in order to conveniently manage the project and make the project most qualitative, competitive, and economical. It also discusses the interaction and/or combination among some of the activities/elements of management functions, management processes, and their effective implementation and applications that are essential throughout the life cycle of project to conveniently manage the project. This handbook will: Focus on the construction management system to manage construction projects Include a number of figures and tables which will enhance reader comprehension Provide all related topics/areas of construction management Be of interest to all those involved in construction management and project management Provide information about building information Modeling (BIM), and ISO Certification in Construction Industry Offer a chapter on Lean construction The construction project life cycle phases and its activities/elements/subsystems are comprehensively developed and take into consideration Henri Fayol’s Management Function concept which was subsequently modified by Koontz and O’Donnel and Management Processes Knowledge Areas described in PMBOK® published by Project Management Institute (PMI). The information available in the book will also prove valuable for academicians/instructors to provide construction management/project management students with in-depth knowledge and guidelines followed in the construction projects and familiarize them with construction management practices.

A textbook for HNC/HND 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.

“Comprehensive Coverage of the Topics on the Civil PE Exam’s Construction Depth Section”—Front cover.

This new edition of a core undergraduate textbook for construction managers reflects current best practice, topical industry preoccupations and latest developments in courses and fundamentals for students. While the construction process still requires traditional skills, changes over recent decades today demand improved understanding of modern business, production and contractual practices. The authors have responded accordingly and the book has undergone a thorough re-write, eliminating some of the older material and adding new processes now considered essential to managing a construction project. Particular emphasis is given, for example, to supply chains and networks, value and risk management, BIM, ICT, project arrangements, corporate social responsibility, training, health and welfare and environmental sustainability.

Modern Construction Management presents construction as socially responsible, innovative, carbon-reducing, manager-involved, people-oriented, crisis-free industry that is efficient and cost effective. The overall themes for the Seventh Edition are: Drivers for efficiency: lean construction Underpinning production management and site production methods. Sustainability: reflecting the transition to a low-carbon economy. Corporate Social Responsibility: embracing health, safety, and environmental sustainability. Modern Construction Management presents construction as socially responsible, innovative, carbon-reducing, manager-involved, people-oriented, crisis-free industry that is efficient and cost effective. The overall themes for the Seventh Edition are: Drivers for efficiency: lean construction Underpinning production management and site production methods. Sustainability: reflecting the transition to a low-carbon economy. Corporate Social Responsibility: embracing health, safety, and environmental sustainability.

Publisher’s Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. The Latest, Most Effective Engineering and Construction project Management Strategies Fully
Construction Project Management, Third Edition provides readers with the "big picture" of the construction management process, giving a perspective as to how the construction industry functions in relation to the national economy and in the public's eye. This book focuses on the collaborative effort required to complete any public or private construction project, providing the construction professional with the skills needed to work with and alongside the owner representative, the designer, and within the public's eye. It explains in detail the project elements and environment, and the responsibilities of the varied project professionals, and follows in detail the chronology of a project.

This book gathers peer-reviewed contributions presented at the 3rd National Conference on Structural Engineering and Construction Management (SECON'19), held in Angamaly, Kerala, India, on 15-16 May 2019. The meeting served as a fertile platform for discussion, sharing sound knowledge and introducing novel ideas on issues related to the program management and design for the future. The respective contributions address various aspects of numerical modeling and simulation in structural engineering, structural dynamics and earthquake engineering, advanced analysis and design of foundations, BIM, building energy management, and technical project management.

Accordingly, the book offers a valuable, up-to-date tool and essential overview of the subject for scientists and practitioners alike, and will inspire further investigations and research.

Accelerate with CPM—and this Leading Guide to Construction Planning and Scheduling CD-ROM Includes Full-Function Deltek Open Plan CPM Software A $2000-retail-value, unrestricted license to this world-class product is provided on the included CD-ROM. No limits to number of activities, time for evaluation, or usage. With instruction on CPM and powerful software, you are ready for business now. The CD-ROM also provides a powerful spreadsheet template, and others are PDF's. The book is written by former vice chair of the celebrated construction management program at Stanford's cable car system and redeveloped New York's JFK airport, and by one of America's leading construction scheduling experts, the Seventh Edition of CPM in Construction Management arms you with the critical knowledge and power to model the project and master the software for smooth handling of complex jobs. This highly informative, practical book shows you how CPM: Works--and how to make it work for you Serves as the analytical tool of choice for evaluation, negotiation, resolution, and/or litigation of construction claims Cuts costs in a one-person operation or the most complex multinational enterprise Helps you stay on top of every aspect of complicated projects Saves you big money in delay avoidance, accurate cost predictions, and claims reductions Multiplies the effectiveness of your instincts, experience, and knowledge Can be successfully implemented by properly utilizing the power of leading scheduling software products Specifications of major engineering firms call for the project CPM to be prepared and administered in accordance with this text, which also serves as a primary resource for the PMI-SP exam preparation. With case studies of major global construction projects and a "John Doe" example project that's followed throughout, this book will simplify your application of CPM. Cut project time to the minimum. Determine which deliveries to expedite, and which may slide. Know instantly the impact of change--and how to thrive while others fail. Understand CPM's courtroom evidentiary value--and watch disputes be amicably resolved. This updated classic is the construction tool that makes everything around you work better, faster, and more economically.

"...integrates business knowledge, principles and practices of project management and construction management will help you achieve a strategic vision, continuously improve construction operations and manage industrial, commercial and institutional projects from conception to occupancy." -- Publisher's description.

Today's businesses are driven by customer 'pull' and technological 'push'. To remain competitive in this dynamic business world, engineering and construction organizations are constantly innovating with new technology tools and techniques to improve performance in their projects. Their management challenge is to save time, reduce cost and increase quality and operational efficiency. Risk management has recently evolved as an effective method of managing both (Promas'ara). Microcosms. Risk is inherent in any planning, estimating, scheduling and/or controlling project that's followed throughout, this book will simplify your application of CPM. Cut project time to the minimum. Determine which deliveries to expedite, and which may slide. Know instantly the impact of change--and how to thrive while others fail. Understand CPM's courtroom evidentiary value--and watch disputes be amicably resolved. This updated classic is the construction tool that makes everything around you work better, faster, and more economically.

While most construction management books are project based, this book looks at management principles and techniques applied to day-to-day problems facing a business in the construction industry. It covers: Business strategy Industrial relations Health and safety Managing people Planning and scheduling Quantitative methods A chapter review of key concepts and a range of worked examples. Since the book was first written in 1982 much has changed. TheSecond Edition has been thoroughly revised and takes account of the increased globalisation of construction, the move from public to private sector work, the drive for productivity, changing procurement methods, new emphasis on life cycle costing and muchmore. It will provide a valuable text for undergraduate and postgraduate courses in construction management, surveying and/or civil engineering as well as offering useful insights for practitioners undertaking CPD activities.

Although construction is one of the largest industries in the United States, it lags behind other industries in its implementation of modern management techniques such as those contained in the Standard for Program Management (the Standard) by the Project Management Institute (PMI®). Construction Program Management details the successful use of the PMI® approach for the construction of capital programs. It describes the tools and techniques to improve the chances of program success. Exploring tactical and strategic management methods, the book outlines a structured, process-based approach to construction program management that leverages structure to bring order to what can otherwise feel like an overwhelming challenge. The opening chapter focuses on basic definitions of project management and program management—highlighting their similarities and differences. A summary review of the Standard describes how these management concepts can be applied to capital construction programs. Explains how to apply the principles of PMI®'s Standard for Program Management to construction programs Describes the difference between leadership (strategic) and management (tactical) skills Compares and contrasts the program management principles included in the PMI® Body of Knowledge with those of the Construction Management Association of America (CMAA®). Through the use of case studies this book provides students, practitioners, and stakeholders with a guided tour through each phase of the program management life cycle. Using language that is easy to understand, the book shows that with the right team, the right leader, and the proper implementation of the steps outlined, all programs can obtain true
success.

This book covers methods adopted for undertaking the design and construction of civil engineering projects. The options for separate design and construction are compared with design and build projects, construction management, and man agement contracting. The salient differences are shown between the various con ditions of contract used. The roles of the engineer, employer’s project manager or his representative under different forms of contract are compared. Requirements for the production of contract documents, specifications, tendering procedures and choice of contractor are set out. The engineer’s powers and the duties of his resident engineer on the site of con struction are considered in detail. Records, filing systems, programme and progress charts used by the resident engineer are illustrated, and advice is given on the handling of safety problems and difficult situations on site. Problems of measurement and billing of quantities according to the civil en gineering standard method are described. Correct procedures for setting rates for varied work, payment for method-related items, and handling claims for unforeseen conditions under ICE Clause 12 are given. Difficulties with delay claims and situations where the contractor’s position is less clear, are discussed. The approach varies widely throughout the book and covers many actual prob lems met on site, including measures that are advisable in relation to site surveys and investigations, construction of earthworks and pipelines, and the production and placing of concrete.

Construction management is about controlling time, cost, quality, and safety, and acting in a socially, politically, and environmentally acceptable manner. Undergraduate non-construction majors and graduate Construction Management students need a general, yet comprehensive, text that covers the fundamentals of construction so that they may operate within the aforementioned parameters. The first edition of Construction Management Fundamentals gives students a solid understanding of construction so that, as designers and constructors, they will be better prepared to make intelligent design decisions and to interact in a meaningful and productive manner. For those students who may take only one or two construction courses, the material is covered in a logical, simple, and concise format.

This book focuses on civil and structural engineering and construction management applications. The contributions constitute modified, extended, and improved versions of research presented at the minisymposium organized by the editors at the ECCOMAS conference on this topic in Barcelona 2014.

This new textbook fills an important gap in the existing literature, in that it prepares construction engineering and built environment students for their first experience of the job site. This innovative book integrates conceptual and hands-on knowledge of project engineering to introduce students to the construction process and familiarize them with the procedures and activities they need to operate as project engineers during their summer internships and immediately after graduation. The textbook is structured into four sections: Section A: Introductory Concepts Section B: Field Engineering Section C: Office Engineering Section D: Advanced Project Engineering The emphasis is on field tasks and case studies. Exercises take this across civil works and commercial building sectors makes this the ideal textbook for introductory to intermediate courses in Construction Engineering, Construction Engineering Technology, Civil and Architectural Engineering, and Construction Management degree programs.

Based on the authors' combined experience of seventy years working on projects around the globe, Construction Equipment Management for Engineers, Estimators, and Owners contains hands-on, how-to information that you can put to immediate use. Taking an approach that combines analytical and practical results, this is a valuable reference for a wide range of individuals and organizations within the architecture, engineering, and construction industry. The authors delineate the evolution of construction equipment, setting the stage for specific, up-to-date information on the state-of-the-art in the field. They cover estimating equipment ownership, operating cost, and how to determine economic life and replacement policy as well as how to schedule a production-driven, equipment-intensive project that achieves target production rates and meets target equipment-related unit costs and profits. The book includes a matrix for the selection of equipment and identifies common pitfalls of project equipment selection and how to avoid them. It describes how to develop an OSHA job safety analysis for an equipment-intensive project, making this sometimes onerous but always essential task easier. The authors’ diverse and broad experience makes this a book that ranges from the rigorous mathematical analysis of equipment operations to the pragmatic discussion of the equipment maintenance programs needed to guarantee that the production predicted in a cost estimate occurs.

Project management is the key to any engineering and construction project's success. Now you can learn from the experts real-world tested strategies you can use to lead your projects to on-time, within budget, high quality success stories. Specifics of scheduling, cost estimating and leadership skills are fully detailed. The authors will show you how to organize your project from the very beginning to achieve success. You'll also learn to use win-win negotiation skills during each stage of your project. Real world examples will facilitate your understanding of how to apply every aspect of the material presented in the text. Loaded with forms, checklists and case studies, this invaluable reference is a must for everyone involved with engineering and construction projects.

The first work to apply advances in the study of human factors to the management of workers and work activities in the construction industry. Provides civil engineers, managers, and safety specialists with an improved understanding of the importance of human factors in construction work, and offers practical guidelines, specifically developed for the building industry, for dealing with human problems in the work place. Experts from the medical, social, and physical sciences explore accidents and accident prevention, effects of environmental conditions on productivity, ergonomic design of construction machinery, workload, the effectiveness of training programs, and more.

The Latest, Most Effective Engineering and Construction project Management Strategies Fully revised throughout, this up-to-date guide presents the principles and techniques of managing engineering and construction projects from the initial conceptual phase, through design and construction, to completion. The book emphasizes project management during the beginning stages of project development to influence the quality, cost, and schedule of a project as early in the process as possible. Featuring an all-new chapter on risk management, the third edition also includes new sections on: Ensuring project quality The owner’s team Parametric estimating importance of the estimator Formats for work breakdown structures Design work packages Benefits of planning Calculations to verify schedules and cost distributions Common problems in Design-Build operations Based on the author’s diverse and broad experience in working with hundreds of project managers, this essential resource includes many new real-world examples and updated sample problems. Project Management for Engineering and Construction, Third Edition, covers: Working with project teams Project initiation Early estimates Project budgeting Development of work plan Design proposals Project scheduling Tracking work Design coordination Construction phase Project close out Personal management skills Risk management

This new edition updates and revises the best practical guide for on-site engineers. Written from the point of view of the project engineer it details their responsibilities, powers, and duties. The book has been fully updated to reflect the latest changes to management practice and new forms of contract.

The relationship between project managers representing project owners and those on the contractor side is often threatened by communication risk. The main communication risk minimization strategy in the construction phase is trust, which plays a major role in the success of key working relationships across the construction industry. This book investigates this phenomenon, and goes on to show that once developed, trust outlines all other strategies of communication risk minimization and is essential for project success. As part of this investigation, communication risk in construction projects is examined in detail, with a particular focus on the effects of information asymmetry on working relationships. Drawing on many years of empirical research involving project managers working internationally, Trust in Construction Projects also provides strategies to minimize information asymmetries in order to build trust, and ensure the success of construction projects. By increasing understanding of trust in construction projects, this book adds an important new perspective to the fields of construction management and project management. This is essential reading for researchers and students, as well as practitioners in these fields.
fields. This book gathers peer-reviewed contributions presented at the International Conference on Structural Engineering and Construction Management (SECON'21), held on 12-15 May 2021. The meeting served as a fertile platform for discussion, sharing sound knowledge and introducing novel ideas on issues related to sustainable construction and design for the future. The respective contributions address various aspects of numerical modeling and simulation in structural engineering, structural dynamics and earthquake engineering, advanced analysis and design of foundations, BIM, building energy management, and technical project management. Accordingly, the book offers a valuable, up-to-date tool and essential overview of the subject for scientists and practitioners alike, and will inspire further investigations and research.

This book provides a step-by-step guidance on how to implement analytical methods in project risk management. The text focuses on engineering design and construction projects and as such is suitable for graduate students in engineering, construction, or project management, as well as practitioners aiming to develop, improve, and/or simplify corporate project management processes. The book places emphasis on building data-driven models for additive-incremental risks, where data can be collected on project sites, assembled from queries of corporate databases, and/or generated using procedures for eliciting experts’ judgments. While the presented models are mathematically inspired, they are nothing beyond what an engineering graduate is expected to know: some algebra, a little calculus, a little statistics, and, especially, undergraduate-level understanding of the probability theory. The book is organized in three parts and fourteen chapters. In Part I the authors provide the general introduction to risk and uncertainty analysis applied to engineering construction projects. The basic formulations and the methods for risk assessment used during project planning phase are discussed in Part II, while in Part III the authors present the methods for monitoring and (re)assessment of risks during project execution.


This book focuses on civil and structural engineering and construction management applications. The contributions constitute modified, extended and improved versions of research presented at the minisymposium organized by the editors at the ECCOMAS conference on this topic in Barcelona 2014.

The management of construction projects is a wide ranging and challenging discipline in an increasingly international industry, facing continual challenges and demands for improvements in safety, in quality and cost control, and in the avoidance of contractual disputes. Construction projects grew out of a series of concerted efforts by the Construction Industry to improve the quality of work and to manage risks. Managing a construction project requires the ability to manage risk as well as to manage the technical and financial aspects of the project. Project management requires the ability to manage people, processes, and tasks. Risk management is essential for the successful completion of a construction project.

This new edition of A Dictionary of Construction, Surveying, and Civil Engineering is the most up-to-date dictionary of its kind. In more than 8,000 entries it covers the key areas of civil and construction engineering, construction technology and practice, construction management techniques and processes, as well as legal aspects such as contracts and procurement. It has been updated with more than 600 new entries spanning subjects such as sustainability, new technologies, disaster management, and building software. New additions include terms such as Air source heat pump, hydraulic failure, mechanical ventilation with heat recovery, off-site construction, predictive performance, sustainable development, and value engineering. Useful diagrams and web links complement the text, which also includes suggestions for further reading. With information from more than 1,500 experts from around the world, this dictionary is an authoritative resource for engineering students, construction professionals, and surveyors.

Civil engineering is an interdisciplinary field concerned with the planning, construction and management of built environment. Construction planning and management refers to the process of designing and constructing any building, roads, bridges, etc. Its main purpose is to control and check the quality and cost of the project. The different types of construction that fall under this subject are institutional, agricultural, environmental, residential, heavy civil, industrial, etc. This text picks up individual branches and explains their need and contribution in the context of the growth of this field. The topics covered herein deal with the core aspects of the area. This textbook will serve as a reference to a broad spectrum of readers.

Exploring complex and intelligent analytical and mathematical methods, this book examines how different approaches can be used to optimize program management in the construction industry. It presents an in-depth study of the different program management methods, ranging from simple decision-making techniques and statistics analysis to the more complex linear programming and demonstrates how knowledge-base systems and genetic algorithms can be used to optimize resources and meet time, budget and quality criteria. It addresses topics including decision-making principles, planning and scheduling, mathematical forecasting models, optimization techniques programming and artificial intelligence techniques. Providing a valuable resource for anyone managing multiple projects in the construction industry, this book is intended for civil and construction engineering students, project managers, construction managers and senior engineers.

Although the construction and engineering sector makes important contributions to the economic, social, and environmental objectives of a nation, it has a notorious reputation for being an unsafe industry in which to work. Despite the fact that safety performance in the industry has improved, injuries and fatalities still occur frequently. To address this, the industry needs to evolve further by integrating safety into all decision making processes. Strategic Safety Management in Construction and Engineering takes a broad view of safety from a strategic decision making and management perspective with a particular focus on the need to balance and integrate ‘science’ and ‘art’ when implementing safety management. The principles covered here include the economics of safety, safety climate and culture, skills for safety, safety training and learning, safety in design, risk management, building information modeling, and safety research methods and the research-practice nexus. They are integrated into a strategic safety management framework which comprises strategy development, implementation, and evaluation. Practical techniques are included to apply the principles in the context of the construction and engineering industry and projects. Case studies are also provided to demonstrate the localised context and applications of the principles and techniques in practice.

The latest, most effective engineering and construction project management strategies. Fully revised throughout, this up-to-date guide presents the principles and techniques of managing engineering and construction projects from the initial conceptual phase, through design and construction, to completion. The book emphasizes project management during the beginning stages of project development to influence the quality, cost, and schedule of a project as early in the process as possible. Featuring an all-new chapter on risk management, the third edition has been extended and improved versions of research presented on: Ensuring project quality. The owner’s team. Parametric estimating. Importance of the estimator. Formats for work breakdown structures. Design work packages. Benefits of planning. Calculations to verify schedules and cost distributions. Common problems in managing design. Build-operate-transfer delivery methods Based on the author’s decades of experience in working with hundreds of project managers, this essential resource includes many new real-world examples and updated sample problems -- page 4 of 4.

Find Practical Solutions to Civil Engineering Design and Cost Management Problems A guide to successfully designing, estimating, and scheduling a civil engineering project. Integrated Design and Cost Management for Civil Engineers shows how practicing professionals can design fit-for-use solutions within established time frames and reliable budgets. This text combines technical compliance with practical solutions in relation to cost planning, estimating, time, and cost control. It incorporates solutions that are technically sound as well as cost effective and time efficient. It focuses on the integration of design and construction based on solid engineering foundations contained within a
code of ethics, and navigates engineers through the complete process of project design, pricing, and tendering. Well illustrated, the book uses cases studies to illustrate principles and processes. Although they center on Australasia and Southeast Asia, the principles are internationally relevant. The material details procedures that emphasize the correct quantification and planning of works, resulting in reliable cost and time predictions. It also works toward minimizing the risk of losing business through cost blowouts or losing profits through underestimation. This Text Details the Quest for Practical Solutions That: Are cost effective Can be completed within a reasonable timeline Conform to relevant quality controls Are framed within appropriate contract documents Satisfy ethical professional procedures, and Address the client’s brief through a structured approach to integrated design and cost management. Designed to help civil engineers develop and apply a multitude of skill bases, Integrated Design and Cost Management for Civil Engineers can aid them in maintaining relevancy in appropriate design justifications, guide work tasks, control costs, and structure project timelines. The book is an ideal link between a civil engineering course and practice.