Text Books

Bell, F.G, 1998, Engineering Geology, Blackwell Science, Oxford.

"Every engineering structure, whether it's a building, bridge or road, is affected by the ground on which it is built. Geology is of fundamental importance when deciding on the location and design of all engineering works, and it is essential that engineers have a basic knowledge of the subject.

Engineering Geology introduces the fundamentals of the discipline and ensures that engineers have a clear understanding of the processes at work, and how they will impact on what is to be built. Core areas such as stratigraphy, rock types, structures and geological processes are explained, and put in context. The basics of soil mechanics and the links between groundwater conditions and underlying geology are introduced.

As well as the theoretical knowledge necessary, Professor Bell introduces the techniques that engineers will need to learn about and understand the geological conditions in which they intend to build. Site investigation techniques are detailed, and the risks and risk avoidance methods for dealing with different conditions are explained."

Latham, J.P., 1998, Advances in Aggregates and Armourstone Evaluation, Geological Society Engineering Geology Special Publication No: 13.

"This volume highlights a range of pressing research issues in natural construction materials. It is of direct relevance to the civil engineering industry, which faces growing pressures to sustain the natural and built environment while demanding a standardized high-quality construction product across Europe. Advances In Aggregates and Armourstone Evaluation provides an authoritative selection of research papers including overviews and case histories. The book examines a range of aggregate and armourstone specifications and new tests, including clear examples of how the statistical significance of test results can affect producers and users. Papers on rock source evaluation procedures and the opening of a new quarry are of particular practical value to engineering geologists serving the extractive industries. In addition, construction material availability, future demand and sustainability are examined, emphasizing new data for marine sand and gravel, armourstone, shingle durability, and concrete made from alternative aggregates. The book contains North American and European research with international relevance. It will stimulate new ideas that feed into the best practice of tomorrow's engineering geologists."

McNally, G.H., 1998, Soil and Rock Construction Materials, E and FN Spon, Firts published, London and New York.

"Soil and Rock Construction Materials provides an introduction to the investigation, extraction, processing and specification of natural soil and rock materials, with an emphasis on why particular material properties are sought and how they may be modified. These materials are most widespread, voluminous and lowest priced of all mineral commodities and

have a breadth of uses from building (brick, cement, dimension stone) through to civil engineering materials (pavement materials, ballast, wave protection stone).

The book covers the full range of soil and rock construction materials including crushed stone, sand and gravel, natural and prepared roadbase, earthfill and rockfill, heavy clay, armour stone and dimension stone. Environmental aspects of quarrying, such as the use of waste materials, blast monitoring and pit reclamation, are studied in detail. New developments are discussed such as the trend towards fewer but larger quarries, the employment of by-products, and need for upgrading marginal materials."

Smith, M.R., 1999, Stone: Building Stone, Rock Fill and Armourstone in Construction, Geological Society Engineering Geology Special Publication, No: 16.

"The Engineering Group of the Geological Society convened a Working Party in 1993 and gave it the objective of presenting an authoritative, comprehensive and contemporary account of the use in construction of rock in larger particulate form, subsequently generally referred to as 'stone'. The membership of the Working Party comprised experts in the origins, investigation, extraction, processing, use, specification, decay, cleaning and repair of stone. The resulting book is a unique, modern introduction to the subject and a source of further reference for architects, civil engineers, geologists, masons, quarry managers, structural engineers, surveyors and those responsible for restoration and maintenance of stone structures. Text boxes explain detail or specialized topics to the interested reader without interupting the main flow of the text. The book is highly illustrated with photographs taken by the authors and diagrams specially drawn for this publication. The book also includes a valuable glossary of terms and compliations of test methods and rock properties."

Primel, L. and Tourenq, C., 2000, Aggregates: Geology, Prospection, Environment, Testing, Specifications, Extraction, Processing Plants, Equipments, Quality Control. Rotterdam, Netherlands: A.A. Balkema, 2000.

"This work sets out to explore the "aggregates" field in a comprehensive manner, from natural deposits to finished products. Topics covered include: the aggregates market in France; tests and specifications; loading and transport; the quarrying of massive rocks; and crushing and grinding".

Smith, M.R. and Collis, L., 2001, Aggregates Sand, Gravel and Crushed Rock Aggregates for Construction Purposes. London: Geological Society.

"In 1985, the Geological Society published Aggregates as the first volume in its Engineering Geology Special Publication series. It met with immediate acclaim, being awarded the Brewis Trophy by SAGA in 1986 and drawing the following review from the Canadian Geotechnical Journal in 1988: This book is in general a well-researched, informative and useful guide to the location, sampling and testing of aggregates. If your work involves the use of aggregates, buy this book and read no further; this volume will be an essential and valuable reference that you

will use for many years. In 1989, the working party whose work had resulted in the publication of Aggregates was reconvened to revise, update and extend their report. Each chapter was reviewed by independent referees. The second and greatly improved edition, published in 1993 and reprinted in 1998, represented the distillation of a vast body of knowledge and experience held not only by the members of the working party, but also by many international experts, scientists and engineers who contributed as reviewers, referees and corresponding authors."

Chandra, S. and Berntsson, L., 2002, Lightweight Aggregate Concrete, Noyes Publications, New York, U.S.A.

"In spite of the increasing use and demand for lightweight aggregate concrete (LWAC), there is still a lack of adequate explanations to understand the mechanisms responsible for the strength and durability properties of LWAC. This book is written to give an overall picture of LWAC, from the historical background, aggregate production, proportioning and production of concrete, to applications in structures. Physical properties and chemical durability are described in detail. The physical properties include density, strength, shrinkage, and elasticity. Chemical durability includes resistance to acids, chloride ingress, carbonation, and freeze-thaw resistance. Fire resistance is also included, which is seldom considered, but is a very important aspect of the safety of the structure.

Microstructure development and its relation to the durability properties of LWAC generally are not highlighted in the literature. The development of bonds, the microstructure with different binder systems, and different types of lightweight aggregates are explained. They show how lightweight aggregate concrete differs from normal weight concrete. The chapters on chloride ingress and freeze-thaw resistance are detailed because of the use of LWAC in offshore construction.

The economical aspects of using LWAC are also reviewed. Emphasis is placed on the fact that although the cost of LWAC is high, the total cost of construction has to be considered, including the cost of transport, reinforcement, etc. When these are considered then LWAC becomes cheaper and attractive. The life cycle cost of the concrete is another consideration for calculating long-term savings on maintenance costs."

Fuerstenau, M.C. and Kenneth N.H., 2003, Principles of Mineral Processing. Littleton, Colo.: Society for Mining, Metallurgy and Exploration.

"Destined to become an industry standard, this comprehensive reference examines all aspects of minerals processing, from the handling of raw materials to separation strategies to the remediation of waste products. The book incorporates state-of-the-art developments in the fields of engineering, chemistry, computer science, and environmental science and explains how these disciplines contribute to the ultimate goal of producing minerals and metals economically from ores. With contributions from more than 20 recognized authorities, this

thorough reference presents the most current thinking on the science and technology of mineral processing."

Marker, B.R., Petterson, M.G., McEvoy, F. and Stephenson, M.H., 2005, Sustainable Minerals Operations in the Developing World. London: Geological Society.

"The sustainable development of minerals, which are non-renewable resources, is a major challenge in today's world. In this regard the true definition of 'sustainability' is a debating point in itself: can such a concept exist with respect to non-renewable resources? Perhaps the ideal sustainability model is one that minimizes negative environmental impact and maximizes benefits to society, the economy and regional/national development. Developed and near-developed economies rely for commodity supplies on developing countries where major mining operations are often a mainstay of the domestic economy. Limited environmental regulation and low wages lead to charges of exploitation. Also, large numbers of people have no alternative to living by informal, often dangerous, 'artisanal' mining. This Special Publication gives examples from developing countries from all scales of mineral extraction. The volume reviews environmental, economic, health and social problems and highlights the need to solve these before sustainability can be achieved. The better solutions require mutual understanding, through full involvement of all stakeholders, education, training and investment so that small-scale and artisanal mines can grow into well-managed operations. At larger scales, most major international mining companies have now improved their practices and are monitoring their progress, although there is no room for complacency in this rapidly changing area."

Guilbert, J.M. and Park, C.F., 2007, The Geology of Ore Deposits. Long Grove, IL: Waveland.

"Modern civilization's dependence upon an increasing volume and diversity of minerals makes the search for new ore deposits ever more difficult. Now available from Waveland Press, Guilbert & Park's text presents ideas, principles, and data fundamental for beginning economic geologists to understand the genesis and localization of ore deposits and of the minerals associated with them. The authors comprehensively describe the physical and chemical characteristics of ore deposits, and correlate them with environments and conditions of deposition since ore deposits are best interpreted as extensions of the environments responsible for their enclosing rocks. Examples and illustrations emphasize structural, chemical, and temporal controls and encourage the three-dimensional thinking used by productive explorationists as they face unsolved problems. This upper-level undergraduate text is fully illustrated and meticulously indexed. Its reliable, authoritative coverage assumes an upper-level command of chemistry and physics, as well as mineralogy, petrology, and structural geology. Outstanding features include: 1) develops and combines the abilities of the explorationist and of the researcher of ore-forming processes; 2) structures the geologic descriptions into groupings recognized by researches and explorers alike; 3) builds confidence, revitalizes curiosity, and encourages expanded thinking; 4) emphasizes that the days of "easy" discovery of outcropping ores are not over; and 5) includes revised, expanded, and updated descriptions of districts".

Alexander, M.G. and Mindess, S., 2008. Aggregates in Concrete (Modern Concrete Technology), London: Taylor & Francis.

“Bringing together in one volume the latest research and information, this book provides a comprehensive account of the selection and use of aggregates in concrete. After an introduction defining the purpose and role of aggregates in concrete, the authors present an overview of aggregate sources and production techniques, followed by a detailed study of their physical, mechanical and chemical properties. This knowledge is then applied to the use of aggregates in both plastic and hardened concretes, and in the overall mix design. Special aggregates and their applications are discussed in detail, as are the main specifications, standards and tests in use.

Aggregates in Concrete is an essential reference for concrete practitioners, academics, and researchers, and a key text for graduate students of concrete technology.”

Calkins, M., 2009, Materials for Sustainable Sites: A Complete Guide to the Evaluation, Selection and Use of Sustainable Construction Materials. Hoboken, N.J.: Wiley.

“This complete guide to the evaluation, selection, and use of sustainable materials in the landscape features strategies to minimize environmental and human health impacts of conventional site construction materials as well as green materials. Providing detailed current information on construction materials for sustainable sites, the book introduces tools, techniques, ideologies and resources for evaluating, sourcing, and specifying sustainable site materials. Chapters cover types of materials, both conventional and emerging green materials, environmental and human health impacts of the material, and detailed strategies to minimize these impacts. Case studies share cost and performance information and lessons learned.”