Rock Mechanics Principles in Engineering Practice

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Authors of rock mechanics texts often try to simplify a complex association of traditionally straightforward mechanics of materials in a complex natural medium—rock. Professor J. A. Hudson has accomplished, in one thin book, what most others have not—the ultimately simple story of how rock behaves under stresses imparted by engineered construction. The book is one of many developed by the Construction Industry Research and Information Association (CIRIA) of London, UK. CIRIA is an organization that exists to standardize construction technology for daily use. Dr. Hudson, of Imperial College of the University of London, has distilled the elements of practical rock mechanics into a 72-page paperback (large format) for CIRIA. The handbook has been released commercially through Butterworths in order to reach a broad audience.

Readers of the Geotechnical Testing Journal will have broad and general use for this fine paperback for three reasons: (1) for its treatment of the need for intact rock property testing; (2) for its coverage of the effects of discontinuities; (3) for its chapter treating measurement of rock behavior and rock properties.

Each topic in the book is well illustrated by fine black-and-white photographs and very understandable architectural-style line drawings in black, white, and shades of brown. Throughout the book, the reader is faced with evidence that discontinuities govern the true nature of rock masses. This is a refreshing improvement over many existing rock mechanics texts. Simple charts portray otherwise complex mathematical relationships, helping the reader develop a seasoned practicing engineer's appreciation for what makes rock behave as it does during the construction effort. Many charts are innovative and deliver rule-of-thumb messages that alert the reader to simple facts not otherwise well taught and for which the reader may have only a vague appreciation.

Strangely, the book does not explain its intended audience. I believe nearly everyone who works with or in rock can benefit from reading it. Who, then, is the audience? I imagine the book will be of greatest value to those who do not consider themselves "rock mechanics" experts; this includes engineering geologists, general civil engineers, most mining engineers, and all technicians engaged in laboratory testing and in the installation of rock instrumentation and the reduction of its data. Organizations should provide copies of this book to project managers and foremen engaged in rock excavation (above ground or underground) and in the production of crushed-rock aggregates.

The book should also be read by those experienced in rock mechanics, because of the stimulation afforded by Professor Hudson's concise explanation of the elements of engineering with rock. We all need to investigate perceptions and perspectives of our own specialties.

There is an unusual derivative use for this book. Consultants can give a gift copy to a client during a briefing. Another bonus: this manual cites frequent references (at the bottom of nearly every page). Also, most topics are presented in succinct one- or two-page treatments, short enough not to bore even the busiest reader. Nearly all topics are illustrated by photographs and schematic drawings; the reader can gain direct assistance for his/her own projects from the thought-stimulating text.

One thin chapter is devoted to established applications in which four common rock engineering topics are treated in stage design discussions. The reader can extend the reasoned logic of this treatment to other practical uses.

I am quite enthused about the depth and breadth of this simple book and with the stimulating messages contained in its measured words. We seldom see such a powerful message packed so densely and so pleasurably worded! At 35 cents per page, it is a real bargain.