



METADATA

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Abstract

This book is intended for undergraduate students of Polytechnic Schools and Technological Institutions who are studying rock mechanics, as well as practicing engineers who wish to understand the relevant theoretical background and learn about the latest views on the mechanical behavior of rocks. The book develops the basic concepts of engineering as applied to rocks, with an emphasis on laboratory methods and standard tests for determining the physical and mechanical properties of rock and its discontinuities. The practical applications of rock mechanics are introduced through empirical methods for estimating the strength and deformability of rock masses, as well as through the examination of failure mechanisms of surface structures in rocks, which are controlled by the strength of the discontinuities or the rock mass. More specifically, the reader will find in this book the necessary material to understand concepts related to: - the nature

of rock as a geological material and its relationship to its mechanical and physical properties, - the importance of the stress state of rock and methods for analyzing stress, - deformation and the constitutive behavior of rock, - the macroscopic behavior of rock under compression and tension, - the determination of the physical and mechanical properties of rock in the laboratory, - the determination of the shear strength of discontinuities in the laboratory the estimation of the shear strength of discontinuities in situ, and their significance for the assessment of the stability of rock slopes, when the failure of the slope is controlled by the sliding of rock fragments on discontinuity surfaces, - the structure, the technical classification and empirical methods for determining the strength and deformability of rock masses, with application to the analysis of slope stability in weak fragmented rock masses and in rock foundations.

