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rock mass properties introduction reliable estimates of the strength and deformation characteristics of rock masses are required for almost any form of analysis used for the design of slopes foundations and underground excavations rock mass classification schemes have been developing for over 100 years since ritter 1879 attempted to formalise an empirical approach to tunnel design in particular for determining support requirements the following seven categories contain strength criteria and constitutive models available in rs2 for defining the strength of your rock mass or soil elastic plastic the elastic plastic category includes mohr coulomb hoek brown drucker prager generalized hoek brown and discrete function strength criteria softening hardening in this webinar that was hosted on february 10th 2021 dr alireza azami showcased how to determine rock and soil material properties using rocscience tools rock mass properties for surface mines evert hoek and antonio karzulovic 1 1 introduction reliable estimates of the strength and deformation characteristics of rock masses are required for almost any form of analysis used for the design of surface excavations rock masses consist of intact rock pieces separated by tightly interlocking discontinuities this lecture deals with the data collection and in situ testing required for the estimation of this paper presents the results of ongoing research carried out by the author exploring methods to provide a more robust estimate of rock mass properties specifically for use in tunnel design data from various large scale rock mass failures are introduced including coal pillars rock masses three properties of the rock mass must be estimated these are uniaxial compressive strength □ □ of the intact rock pieces value of the hoek brown constant □ □ for these intact rock pieces and value of the geological strength index gsi for the rock mass rocscience is a suite of software tools that can help you design and analyze underground construction projects involving rock masses whether you are working on tunnels caverns mines or text appears rock mass properties lecture 4 transitions to the first slide showing a rock face of a mountain with zigzag striations and foliage near the top the title rock mass properties remains this paper discusses the development uses and limitations of the hoek brown empirical rock and rock mass strength criterion some of the extensions made to the criterion by others and an rock mass properties rocscience user friendly interface rock mass properties rocscience 4 2 understanding the ebook rock mass properties rocscience the rise of digital reading rock mass properties rocscience advantages of ebooks over traditional books 3 balancing ebooks and physical books rock mass properties rocscience benefits of a the presented method applies best for characterizing hard rock masses well exposed after blasting e g in dam foundation or quarry slopes or favourably outcropping on natural rocky slopes where joint surfaces can generally be easily attained and analysed similar content being viewed by others 1 introduction characteristics of a rock mass to provide initial estimates of support requirements and to provide estimates of the strength and deformation properties of the rock mass it is important to understand the limitations of rock mass classification schemes palmstrom and broch 2006 and that their use does not and cannot replace some of the the results of extensive geotechnical explorations and field measurements were applied to obtain the rock mass classification characterization systems such as rock mass rating rmr rock condition rating rcr q system q rock mass number qn rock mass index rmi rock structure rating rsr and geological strength index gsi for a wide of soil and rock properties for geotechnical design applications this document addresses the entire range of materials potentially encountered in highway engineering practice from soft clay to intact empirical equations for predicting rock mass deformation modulus compared with data from in situ measurements 2 in situ test methods the most common in situ test for the determination of the deformation modulus of a rock mass is the plate loading test or jacking test such as those shown in figs 2 and 3 rock masses are inherently complex media composed of intact rocks and fractures and their mechanical behavior and deformation characteristics are significantly influenced by the characteristics and development of fractures in this study a discrete fracture network dfn model was constructed based on comprehensive field surveys and meticulous laboratory tests by utilizing the finite rock mass properties for underground mines evert hoek 1 1 introduction reliable estimates of the strength and deformation characteristics of rock masses are required for almost any form of analysis used for the design of underground excavations the rock mass index rmi construction materials commonly used in 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