

Title: Strength characterisation of shale using Mohr-Coulomb and Hoek-Brown criteria

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Abstract: Parameters on rock material strengths like triaxial compressive strength are usually determined from laboratory test on intact rock samples. Uncertainties arise in predicting the behaviour of a rock mass under confinement due to its discontinuous nature. Discontinuity such as joint induces inhomogeneous and anisotropic behaviour in the rock mass, in contrast to the behaviour of intact rock samples used in the lab tests. Several empirical approaches such as Rock Mass Rating (RMR) are available to classify and to evaluate the mass strength of discontinuous rock. However, RMR suffers from several limitations for it is not suitable for very poor quality rock mass such as shale. This study investigates the suitability of the new empirical approach namely Hoek-Brown failure criterion (2002). Such that it together with RocLab software, are used to evaluate and to assess the strength of rock mass under confinement and field condition. In this study two failure criteria were served. Results obtained indicate that the failure envelope derived using the new Hoek-Brown criterion shows a better presentation of shale under field condition in comparison with the classic Mohr-Coulomb method.