CURRENT PRACTICES FOR ESTIMATION OF STRENGTH AND DEFORMATION PROPERTIES OF WEAK ROCK MASSES FOR GEOTECHNICAL APPLICATIONS

ABSTRACT

A weak rock mass comprises a collection of material with diverse characteristics and there is thus no single description for weak rock masses. This report summarises developments made in the understanding of weak rock mass, based on measurable parameters.

Available tests predominantly measure the compressional strength of intact rock material. The shear strength is then estimated through existing failure criteria, since it is very difficult to obtain the shear strength of rock directly. Wiid (1981) offered an alternative testing technique, ideal for the measurement of shear strength of very soft to soft rock, in the form of a modified vane shear test and this technique is explored further in this report.

Additionally, current modelling practices for rock masses generally consider shear strength criteria. However, unexpected failures in major excavations indicate the importance of damage mechanics and the presence of tensile strains in the rock (mass). Through correlations between measurable parameters, a conceptual model for rock strength, is suggested.

ELAINE ODENDAAL
1180316