

Study of shear strength of rocks from Kohat area formations

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Shear strength plays a vital role in the designing of mining and civil structures within or on the rocks. The parameter can be determined either through direct or indirect methods. Many mining and civil structures have been constructed and many are under consideration in the area majorly in limestone. Shear strength of the rock type of the area has been determined using indirect methods previously. However it is extremely necessary to apply direct methods for comparison purposes. In this study shear strength of Kohat Limestone was determined from direct method using shear box apparatus. Tests were carried out under constant normal load condition (CNL). Nine samples were tested under constant normal load up to 0.020% of σ_c (uniaxial compressive strength). Barton model was fitted to laboratory test data. Joint wall roughness coefficient (JRC) was obtained from the impression of joint wall roughness and compared with Barton standard profiles. Since these were fresh joints, therefore uniaxial compressive strength (UCS) was used as joint wall compressive strength (JCS). JRC and JCS values were same for all the samples. Microsoft Excel built in optimization tool so called “Solver” was used to optimize the basic friction angle, Analysis of the results were compared with indirect method for determination of the said parameter. It was observed that the frictional angle determined for Kohat Limestone using direct method is close to that from indirect methods but on higher side.