



## **The analysis of joint slope sliding failure based on the Barton-Bandis non-linear strength criterion**

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The main purpose of this study is to analyze the fracture of joint slope through non-linear strength criterion. Based on the direct shear test of structural plane and the discrete element numerical simulation, the Barton-Bandis nonlinear strength criterion of discontinuities was used to the transformation of Mohr-Coulomb sliding parameters, which made the shear strength parameters of the joints change with its changing stress state. By comparing the measured curve and the numerical simulation curve introducing Barton-Bandis empirical formula, results showed that the formula could effectively simulate the shear test of the curve from ascent phase to peak phase, so the formula could be used for the analysis of joint slope sliding failure. When the numerical calculation was carried out under Mohr-Coulomb model, the blocks in sliding zone were whole slipping along the structure plane, and there wasn't separation between these blocks, besides their displacement were almost synchronous. After introducing the correction formula, there was a tendency to disintegrate between each block as slipping, and the sliding failure mode was closer to the current state, which proved the rationality of the introduction of Barton-Bandis non-linear strength criterion.