



Critical taper model with a nonlinear failure criterion

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This study incorporates the Hoek and Brown failure criterion into the critical taper model to estimate the taper angle of thrust belt wedge. Based on the proposed critical taper model with a non-linear failure criterion, the wedge strength will decrease with the increasing of wedge thickness. Accordingly, the taper angle increases with the increasing of wedge thickness. Besides, the uniaxial compressive strength, geological strength index and the coefficient of friction on the detachment fault affect the relation between wedge thickness and taper angle. Case study of the wedge in Taiwan, Japan and Canada demonstrated that the nonlinearity of wedge strength should play certain role on the lateral variation of the taper angle of a thrust belt wedge.