RESPONSE OF CLAY SHALE TO THE VARIATION OF MOISTURE CONTENT

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ABSTRACT: Deterioration of shale often occurs in open mining activity because the material is exposed to climate change which causes repetitive change in moisture content and weathering process. Furthermore, the dumping of excavated material caused an accumulation of water and pounding at the intermediate layer and further reduced the shear strength. The increase of water content beyond the infiltration capacity will cause the reduction of inter-particle bonding as well as cohesion of the shale. This research focuses on the effect of water content and creep on both exposed and dumped shale. Direct shear test performed on undisturbed shale and exposed shale showed that creep cause a reduction on shear strength by 60%. Shear strength tests conducted on samples obtained at random from dumped area confirmed that the change in water content significantly affects shear strength. Therefore, the prediction of slope stability should be based on the actual shear strength of both the shale and the dumped material.

Keywords: shear strength, clay shale, moisture content, slope stability