

Experimental study on strength characteristics of red clay under different particle size of calcium carbonate

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Abstract

The calcium carbonates of different particle sizes were incorporated into red clay, and the consolidated undrained triaxial test on red clay was performed by the TKA-TTS-1 triaxial apparatus to analyze the effects of different particle sizes of calcium carbonate and the different incorporation rates of calcium carbonate on the mechanical properties of red clay. The results show that the incorporation of calcium carbonate reacts with the cement formed by free ferric oxide in red clay, resulting in a decrease in cohesion and changing the strength of red clay. With the increase of nano-calcium carbonate incorporation rate, the shear strength of red clay decreased, and it showed a trend of decreasing first and then increasing. Because the specific surface area of nano-calcium carbonate is larger than that of ordinary calcium carbonate, it has a significant effect on the mechanical properties of red clay.