

MECHANISM CONTROLLING UNDRAINED SHEAR CHARACTERISTICS OF INDUCED CEMENTED CLAYS

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Abstract

Understanding of undrained shear behavior of induced cemented clay is of utmost importance for strength and deformation analyses of in-situ deep mixed columns under short-term condition. From the critical analysis of two different clays (Bangkok and Ariake clays) admixed with cement, the difference in undrained shear responses of the induced cemented and uncemented clays are brought out. Since the induced cemented clays are in meta-stable state, the strength and deformation characteristics are controlled by the clay fabric and cementation. At pre-yield state, the cementation is the main contributing factor of the strength while the effect of fabric comes into play when the state of stress is at post-yield state. The strain softening behavior is realized even at post-yield state, attribute to the break up of the cementation bond. The failure envelope of the induced cemented clay is a single straight line for both pre- and post- yield states, which is different from that of uncemented clay. The role of the cement is mainly to increase the cohesion intercept with insignificant change in internal friction angle.

Keywords: cementation, induced cemented clay, fabric, isotropically consolidated undrained triaxial compression (CIUC) test, strength and deformation characteristics

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