

Study on Creep Properties of Sand and Cemented Sand

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In this study, we investigated the effects of creep on sand and cemented sand, using triaxial test. Sand represents a non-cohesive material, while cemented sand represents a brittle material. Before the failure of specimens, the deviator stress was fixed and the cyclic mean stress was applied to study the influence of creep on the materials. According to the test results, the axial strain accumulation of sand caused by creep is less, and the peak strength is larger than that of the monotonic loading when the axial loading is resumed. For cemented sand, creep causes microcracks inside the specimens, gradually forming a failure surface. When the axial strain accumulation is large enough, the reapplication of the axial loading shows a reduction of peak strength. We conclude that the influence of creep on non-cohesive material (sand) is limited, whereas creep can reduce the strength of the brittle material (cemented sand) and even cause failure.

Keywords: creep, triaxial test, sand, cemented sand, strength, failure