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## Experimental study on the freezing-thawing deformation of a silty clay

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**Abstract:** Freezing-thawing deformation is a key factor in determining damages for engineering structures in cold regions. Based on the laboratory experiments, the characteristics of the freezing-thawing deformation were analyzed, and the variation of the matric suction was discussed. The results show that for each freeze-thaw cycle, the freezing-thawing deformation can be divided into five stages, i.e., cold shrink, fast frost heave, slow frost heave, thermal bulge and thaw settlement. At the onset of each cooling process, the cold shrink occurs and the freezing-thawing deformation decreases slightly; and then, with the decreased temperature, the freezing-thawing deformation rapidly increases at the beginning of freezing (fast frost heave); and

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