

## 软土变形时效特性的试验研究

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**摘要** 软土变形的重要特征为具有时效性, 这将导致软土工程的工后沉降。根据实际工程需要, 采用原状土样和扰动土样对软土变形机理进行了一系列室内试验, 包括软土的应力-应变特性、固结效应、次固结特性、蠕变特性等。通过试验成果系统分析可得: (1) 初始固结度对应力-应变关系的影响; (2) 次固结系数与固结压力的关系以及应力历史对次固结系数的影响; (3) 次固结系数与压缩指数的关系; (4) 排水蠕变和不排水蠕变的变形特征; (5) 蠕变变形的影响因素和降低蠕变效应的技术路径等。研究结果表明: 软土变形的时效性产生于固结特性和蠕变特性的耦合效应, 土体的变形过程实际是固结和蠕变共同作用的过程, 任一时刻两种变形在总变形中所占比例取决于多种因素, 其中最重要的是应力水平和排水条件。

**关键词** [土力学](#); [变形时效](#); [次固结](#); [蠕变](#); [软土](#)

分类号

## EXPERIMENTAL STUDY ON TIME-DEPENDENT DEFORMATION OF SOFT SOIL

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### Abstract

Time-dependence is one of the most important deformation behaviors of soft soil. It brings on post-construction settlement of soft soil engineering. For the need of practical engineering, a series of laboratory tests were done with undisturbed samples and disturbed samples respectively. And the deformation mechanism of soft soil was investigated, including stress-strain behavior, consolidation effect, secondary consolidation characteristics, creep effect, and so on. Based on the results, some special properties are systematically analyzed: (1) the influence of initial consolidation on stress-strain curve; (2) the relationship between secondary consolidation coefficient and consolidation pressure, as well as the influence of stress history on secondary consolidation coefficient; (3) the relationship between secondary consolidation coefficient and compression index; (4) the deformation characteristics of drained shear creep and undrained shear creep; (5) influencing factors on creep and technology of decreasing creep deformation. The study results show that time-dependent deformation of soft soil issues from the coupling effect of consolidation characteristics and creep characteristics. The deformation course of soft soil is actually the process of consolidation and creep concurrently. The ratios of two deformations to total deformation depend on many factors, among which stress level and drainage condition are the most important.

**Key words**

### 扩展功能

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[soil mechanics; time-dependent deformation; secondary consolidation; creep; soft soil](#)

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