目次

循环荷载作用下地基一维非线性固结解析解

谢康和　周 瑾 董亚钦

(浙江大学 岩土工程研究所，浙江 杭州 310027)

摘要　　摘要：将孔隙比e与有效应力s ¢关系(e-lgs ¢)引入循环荷载作用下单层地基的一维非线性固结问题的研究之中，通过假定土体中的初始有效应力沿深度均匀分布和固结过程中土体渗透性的降低与压缩性的减小成正比，建立了低频循环荷载作用下单层地基的一维非线性固结问题的固结方程。由w -s ¢变换得出了低频梯形循环荷载作用下单层地基的一维非线性固结问题的解析解，采用Fortran语言编制了相应的计算程序，并通过将其特例情况下的解分别与目前已有的解析解和半解析解进行对比的方法对文中解作了验证。现有单层地基的一维非线性固结解析解均为文中解的特例。

关键词　　关键词：基础工程　 一维非线性固结　 解析解　 循环荷载

分类号

ANALYTICAL SOLUTION FOR ONE-DIMENSIONAL NONLINEAR CONSOLIDATION OF SOIL UNDER CYCLIC LOADINGS

XIE Kang-he，ZHOU Jin，DONG Ya-qin

(Institute of Geotechnical Engineering，Zhejiang University，Hangzhou，Zhejiang 310027，China)

Abstract

Abstract：The well-known empirical e-lgs ¢ relation is introduced into the study on one-dimensional nonlinear consolidation of one-layered soil under cyclic loadings. The corresponding consolidation equation is established with the assumptions that the decrease in permeability of soil is proportional to the decrease in compressibility during the consolidation process and that the distribution of initial effective pressure does not vary with depth. The analytical solution is then developed for the nonlinear consolidation problem under low-frequency trapezoid cyclic loading via the w - s ¢ transform；and the relevant computer program is developed by Fortran programming. In addition，the obtained nonlinear analytical solution is verified through comparing it with the known analytical solution corresponding to special cases and with the semi-analytical solution，respectively. All the relevant analytical solutions so far available for 1D nonlinear consolidation are special cases of this solution.

Key words　 Key words：foundation engineering　 1D nonlinear consolidation　 analytical solution cyclic loadings

DOI:

通讯作者