岩石力学与工程学报 2006 25 (10): 2115 ISSN: 1000-6915 CN: 42-1397/O3

目次

软土基坑突水判断方法模型试验研究

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收稿日期 2005-9-20 修回日期 2005-11-11 网络版发布日期 2006-12-15 接受日期

摘要 结合深基坑的突水问题进行室内模型试验研究，通过对比试验前、后的参数，发现突水前后基底土体物理力学性质的变化规律。基坑突水破坏使得基底软土层的黏聚力和压缩模量显著下降，而对内摩擦角的影响较小。根据试验结果，当承压含水层水头压力值与上覆软土层单位面积质量相等时，土体并不破坏。因此认为传统判断基坑突水的“压力平衡法”具有一定缺陷。在对试验结果进行理论分析的基础上，根据试验的结果考虑基底土层抗剪强度的黏聚力分量，量化地提出软土地基基坑突水的判断方法。研究结果表明，与工程实践进行对比，对于软土地基的基坑突水问题，传统的判断方法过于保守。

关键词 土力学 基坑突水 模拟试验 临界水头 突水判断方法

分类号

MODEL TEST RESEARCH ON JUDGMENT METHOD OF WATER GUSHING IN PIT

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Abstract

Combined with water gushing in pit，the laboratory model test research is carried out. By comparison between the parameters before and after the test，the development regulation of physico-mechanical parameters of the substratum of pit is found. The cohesion and modulus of compression of the substratum are deeply reduced after water gushing in pit，but the internal friction angle of the substratum doesn¢t change. According to the results of the test，when the head pressure of confined aquifer is equal to the earth pressure of the super stratum，the gushing in pit doesn¢t occur. So this paper points out the disadvantages of pressure balance method，traditional judgment method of water gushing in pit. Based on the theoretical analysis of the test results，considering the cohesion force component of the shear strength，the judgment method of gushing in pit is quantified for the first time and is compared with engineering practice. The results show that the traditional judgment method of water gushing in pit is overestimated when it is used to design the pit in soft soil.

Key words soil mechanics water gushing in pit model test critical head judgment method of water gushing

DOI:

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