[1]余闯,徐江伟,刘松玉,等.桩承式路堤中土拱效应的改进多拱理论解及应用[J].自然灾害学报,2013,03:251-258.

YU Chuang,XU Jiangwei,LIU Songyu,et al.Modified multi-arch theoretical solution of soil arching effect in piled embankment and its application[J].,2013,03:251-258.

桩承式路堤中土拱效应的改进多拱理论解及应用(PDF)

《自然灾害学报》[ISSN:/CN:23-1324/X] 期数: 2013年03期 页码: 251-258 栏目: 出版日期: 2013-07-30

Title: Modified multi-arch theoretical solution of soil arching effect in piled embankment and its application

作者: 余闯[1]; 徐江伟[1]; 刘松玉[2]; 潘林有[1]; 方冬芳[1]; 李博[1]

1. 温州大学 建筑与土木工程学院,浙江 温州 325035;

2. 东南大学 岩土工程研究所,江苏 南京 210096

Author(s): YU Chuang[1]; XU Jiangwei[1]; LIU Songyu[2]; PAN Linyou[1]; FANG Dongfang[1]; LI Bo[1]

1. College of Architecture and Civil Engineering, Wenzhou University, Wenzhou 325035, China;

2. Institute of Geotechnical Engineering, Southeast University, Nanjing 210096, China

关键词: 桩承式路堤; 土拱效应; 多拱模型; 竖向应力

Keywords: piled embankment; soil arching effect; multi-arch model; vertical stress

分类号: TU4

DOI: -

文献标识码: -

摘要: 应用土拱理论是计算桩承式路堤中桩体荷载分担比的主要方法.目前土拱的模型多为均质和单一化的几何模型,缺少对土拱真实形状和内部性状的分析.基于多拱理论模型,将路堤中的土拱视为由无穷多个连续拱组成,通过几何分析,并引入静力平衡条件,得到了桩承式路堤中不同部位土体竖向应力的改进的多拱理论解析解,以及沿深度的应力分布规律.对桩承式路堤中土体应力进行了分析,并和模型试验结果进行了对比,计算结果和实测结果具有很好的一致性.研究表明,加强对土拱应力分布规律的研究有助于更好地理解和研究桩承式路堤的工作性状.

Abstract: Application of soil arching theory is the main means for calculation of load sharing ratio between pile and its surrounding soil. Current soil arching models are mostly homogeneous and idealized single geometric models, which are different from real shapes and internal characteristics of soil arches. In this paper, a theoretical model based on multi-arch theory was presented. In the multi-arch model soil arch was assumed as an infinite number of continuous arch forms. The modified theoretical solution was obtained through the geometrical and static analysis, and the stress distribution along the depth was presented. Comparisons of soil body stress in piled embankment between analytical and

model test results demonstrate that calculation results and experimental data are well consistent. This study also shows that the study on internal stress distribution in soil arching is helpful for understanding the behavior of piled embankments.

参考文献/REFERENCES

-

备注/Memo: 收稿日期:2012-10-20;改回日期:2012-12-5。
基金项目:国家自然科学基金资助项目(41002091);浙江省自然科学基金资助项目(LY13E080013);中国博士后科学基金面上项目(2012M521851);温州市科技计划项目(H20100047)
作者简介:余闯(1977-),男,副教授,博士,主要从事环境岩土、地基处理等研究.E-mail:3945735@qq.com