

拓宽路堤下带帽刚性疏桩复合地基应力特性现场试验研究

高成雷^{1, 2}, 凌建明¹, 杜浩¹, 邱欣¹, 杨戈¹

(1. 同济大学 道路与交通工程教育部重点实验室, 上海 200092; 2. 石家庄铁道学院 土木工程分院, 河北 石家庄 050043)

收稿日期 2007-5-26 修回日期 2007-8-25 网络版发布日期 2008-2-28 接受日期 2008-2-15

摘要 依托沪宁高速公路(上海段)拓宽工程试验段, 进行拓宽路堤下带帽刚性疏桩复合地基应力特性的现场足尺试验; 根据试验数据分析桩-土应力水平和分布特征, 并采用不同模式进行桩-土应力比的计算、比较和分析。研究结果表明: 桩体应力集中效应与路堤填筑高度和桩的位置有关。二灰土路堤产生桩体应力集中效应的最小填筑高度为120 cm。靠近坡脚的路堤边坡下方难以产生桩体应力集中效应。中心桩的应力集中效应远大于边缘桩。桩帽底土承载能力的发挥要求桩体具有较强的应力集中效应; 桩帽顶应力与桩帽底应力的显著差异, 表明桩帽底土接近脱空状态。路堤填筑过程中桩-土应力不断调整, 实测桩-土应力比的变化范围为1~12。实测桩-土应力比不能准确地反映拓宽路堤下带帽刚性疏桩复合地基的应力特性, 建议采用桩位应力比作为桩体应力集中效应的评价指标。

关键词 [土力学](#); [拓宽路堤](#); [应力特性](#); [现场试验](#); [带帽刚性疏桩复合地基](#)

分类号

IN-SITU TEST ON STRESS CHARACTERISTICS OF COMPOSITE FOUNDATION WITH SPARSE T-SHAPED RIGID PILES UNDER WIDENING EMBANKMENT

GAO Chenglei^{1, 2}, LING Jianming¹, DU Hao¹, QIU Xin¹, YANG Ge¹

(1. Key Laboratory of Road and Traffic Engineering of Ministry of Education, Tongji University, Shanghai 200092, China;

2. School of Civil Engineering, Shijiazhuang Railway Institute, Shijiazhuang, Hebei 050043, China)

Abstract

In-situ full-scale tests on stress characteristics of composite foundation with sparse T-shaped rigid piles were carried out under the condition of experimental section of Shanghai—Nanjing Expressway widening project. Based on the test data, the level and distribution of pile-soil stress were analyzed; and the pile-soil stress ratios calculated with different methods were studied. The results indicate that pile-stress concentration effects are related to the embankment height and the sites of piles. Pile-stress concentration effects can be found if the height of embankment constructed with soil mixed with fly ash and lime is larger than 120 cm; and they will not be encountered under the embankment slope near slope-foot. The pile-stress concentration effects of the piles in the middle of composite foundation are greater than those of the piles at the range of composite foundation. The bearing capacity of soils under the pile-cap works only when pile-stress concentration effects are great; and the difference between the stresses on the caps and those under the caps all indicate that the soils under the caps are nearly separated from the caps. Pile-soil stress will be adjusted continuously during embankment construction; and the observed pile-soil stress ratios range from 1 to 12. The observed pile-soil stress ratios can not correctly reflect the stress characteristics of composite foundation with sparse T-shaped rigid piles under widening embankment; and it is suggested that pile-stress concentration effects should be

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(370KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含 “土力学; 拓宽路堤; 应力特性; 现场试验; 带帽刚性疏桩复合地基” 的相关文章](#)
- ▶ 本文作者相关文章

- [高成雷](#)
- [凌建明](#)
- [杜浩](#)
- [邱欣](#)
- [杨戈](#)

evaluated with pile-site stress ratio.

Key words [soil mechanics](#); [widening embankment](#); [stress characteristics](#); [in-situ test](#); [composite foundation with sparse T-shaped rigid piles](#)

DOI:

通讯作者