

论文

胶基电敏复合材料传感技术实测加筋土墙的变形

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摘要:

针对目前土工合成材料变形测试中存在的问题, 研发了胶基电敏复合材料传感技术。通过在橡胶绝缘基体中充填导电填料获得具有导电、力敏、柔韧、高弹等特性的复合材料, 基于此种复合材料制作了具有测试低模量、柔性基材及大变形等特点的土工筋带变形测试传感器。利用该传感技术对某露天矿选煤厂槽仓基坑工程中的加筋土挡墙进行了现场实测。结果表明, 筋带拉力与埋深成正比关系; 单条筋带中, 受力最大点位于沿筋带长度1/2~2/3处, 筋带受力处于安全状态。新型传感技术为加筋材料变形测试提供了新的方法与手段。

关键词: 电敏复合材料; 加筋土墙; 力敏; 现场实测

Sensitive conductive composites for deformation test of reinforced soil retaining wall

Abstract:

The new sensing technology based on sensitive conductive rubber's composites was studied for the deformation testing of geosynthetics. The rubber-composites filled with conductive filler were conductive, force sensitive, flexibility, and high elastic. Based on the composites, the new sensor was developed for the deformation testing of geotextile reinforcements which is flexible and the deformation is large. The new test technology was applied to the field measurement of reinforced soil retaining wall in a coal mine slot positions foundation. The results show that the tension of belt is proportional to the depth of soil, the maximum stress points appear in the 1/2 to 2/3 of length along the reinforced belt and the belt is safe. The new sensor provides a new method and mean for the deformation testing of reinforcement material.

Keywords: sensitive conductive composites; reinforced soil retaining wall; force sensitivity; field measurement

收稿日期 2011-03-09 修回日期 2011-08-22 网络版发布日期 2012-02-21

DOI:

基金项目:

国家自然科学基金资助项目 (50974117)

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