

土木工程

基于筋材断裂的加筋膨胀土强度特性分析

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摘要:

基于三轴剪切试验对加筋膨胀土的强度特性进行研究,得出加筋土与对应素土的强度指标关系,分析了加筋土强度的提高宏观表现;结合不同层数加筋土体的应力应变关系及加筋土等效围压分析原理,分析了基于筋材断裂的加筋膨胀土的强度特性,得出不同加筋层数筋材刚断裂时应力莫尔圆应相切于同一条直线,随着轴向压力的增加,多层加筋膨胀土试验筋材逐层断裂,应力莫尔圆向外扩展,表明多层加筋膨胀土的强度逐渐增大,而且试验表明对于柔性筋材,多层加筋土体的强度包络线基本平行,加筋土体强度的增加,只是粘聚力c的增加引起的。

关键词: 三轴试验 加筋膨胀土 断裂 柔性筋材

Study of strength properties of reinforced expansive soils with fault material

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Abstract:

Based on triaxial tests, the stress strain relationship and strength properties of reinforced expansive soils were studied to obtain the relation between the strength index of reinforced soil and that of corresponding plain soil. The macro behavior of reinforced soil strength was analyzed. Combining the stress strain relationship of reinforced soil with different layers and equivalent surrounding pressure analysis principle, the strength properties of reinforcement soil were analyzed when the reinforced material broke. Mohr circles were tangent to the same line when the reinforced materials of one layer broke. With the increase of axial compression, many layers reinforced materials begin to break, and the Mohr circles extended outward. It showed that the strength of reinforced soil increases with the increase of reinforced layers. The test showed that strength envelope of different reinforce layers is approximately parallel and the increase of reinforced soil strength was caused by the increase of cohesion when the reinforced materials are flexible materials.

Keywords: triaxial test reinforced expansive soils fracture flexible material

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