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## 膨胀土地基中大比例模型桩浸水试验研究 (PDF)

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Title: Soaking test of a large-scale modelling pile embedded in expansion soil ground

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摘要: 通过对埋设在膨胀土地基中的一试桩的长时间浸水试验观测,模拟了自然降雨气候条件下单桩位移、沿桩身轴力、侧摩阻力分布、地基胀缩及其时间变化等基桩一系列工作性状和桩-土共同作用规律。试验结果显示:桩顶位移呈现出先下沉后回升并最后趋于稳定的3阶段特征;桩身全长受拉,轴力沿桩身分布呈"波峰"形态。基桩的最大轴力位于桩的中下部,轴力峰值历经由小到大的过程;中性点在浸水过程中,其位置有从桩下部上移的现象;桩侧摩阻力与桩端阻力荷载分担比随时间呈现出先减小后增大并渐趋稳定的3阶段特征。研究结果对膨胀土地基中的桩基设计和施工提供了理论依据。

Abstract: By a long-term soaking test observation and measurement of a pile embedded in expansion soil ground, the pile-soil interaction and a series of pile working characteristics were obtained such as pile settlements, distribution of axial force and lateral friction along pile shaft, foundation swell-shrink and their time-related characteristics, etc under the simulative rainfall condition. Test shows the displacement of the pile top with a law of three stages that it firstly goes down, then goes up until achieves a stable status gradually. Tensile stress is distributed along the whole pile, and axial force distribution along pile body presents waviness form on stress numerical axis. There is axial force peak at the middle-lower part of the pile, and the axial force peak increases with time. Neutrality point of the axial force moves upwards from pile end in a certain degree with the passage of time. The load sharing ratio between lateral friction resistance and tip resistance shows a law of three stages that it firstly decrease, secondly increase, then tends to a constant gradually. Experimental

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