基于静荷载试验的群桩沉降简化分析

Analysis on settlement behavior of pile group based on static loading test for single pile

中文关键词：群桩沉降　桩端沉降比　桩侧沉降比　软弱下卧层　Q-S曲线

英文关键词：pile group settlement　pile toe settlement, pile shaft settlement ratio　single pile static loading test

基金项目：

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中文摘要：

　　群桩沉降预测一直是桩基设计中的难点。本文通过对桩端桩侧性状进行分析，提出了一种群桩沉降简化分析方法。该法直接利用单桩试验预测群桩沉降，把桩端的荷载-位移曲线和桩侧的荷载-位移曲线从单桩静载试验曲线中分开，进而提出了桩端沉降比和桩侧沉降比并给出了计算公式。通常在工作荷载作用下桩端沉降比小于桩侧沉降比，如果把两者等同则会高估了群桩的沉降。对有软弱下卧层的情况，桩端沉降比可能比桩侧沉降比大，因此会低估了群桩沉降。最后通过实例对本文提出的方法进行了验证，表明本文方法切实可行。

英文摘要：

　　Based on the analysis on the performances of pile shaft and pile toe, a simplified method for calculating the settlement of pile group is suggested. In this approach the relationships of loading and settlement for pile shaft and pile toe are studied separately according to the single pile static loading test result. The ideas of the pile shaft settlement ratio and pile toe settlement ratio are suggested. The corresponding formulas for calculating these ratios are proposed. Generally, under the action of working load the pile toe settlement ratio is smaller than that of pile shaft. If neglects the difference between these two settlement ratios, the settlement of pile group will be overestimated. But, in case the soft clay underlying layer exists, the settlement ratio will higher than that of pile shaft. The settlement of pile group will be underestimated. The validity of the proposed method is verified by two examples.

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