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湿陷性黄土强夯加固振动试验研究

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摘要 对采用强夯法加固湿陷性黄土地基所产生的振动影响进行了试验，归纳出了振动在湿陷性黄土中的衰减规律，分析了加固振动对毗邻建筑及人体舒适度的影响情况、黄土振陷产生的原因及条件。试验结果表明：强夯施工会产生巨大的振动，这种振动在湿陷性黄土中衰减很快；振动会对毗邻建筑产生破坏性影响并影响人的舒适度，当单击夯击能较大时，可能会使黄土产生振陷。

关键词 土力学；湿陷性黄土；强夯；振动；舒适性；振陷

分类号

EXPERIMENT STUDY ON VIBRATION TO IMPROVE COLLAPSIBLE LOESS WITH DYNAMIC COMPACTION

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Abstract

Dynamic compaction was widely used to reinforce the collapsible loess foundation. But in urban areas or compression building areas，the vibration caused by this construction method may be effects the comfortableness of residents or damages the adjacent building structures. In this paper，the effect of vibration was tested to improve dynamic loess foundation with dynamic compaction in a typical collapsible loess site. The attenuation regularity of vibration wave in the ground of collapsible loess was concluded with regression method，and the influence on the adjacent buildings and the comfortableness of human body was analyzed. At the same time，the reasons and conditions of vibration-subsidence were analyzed. These results and regularities are compared with those of down hole dynamic compaction (DDC). The results of experiment and analysis demonstrate that the vibration caused by dynamic compaction is tremendous，but it¢s a swift attenuation；and it may influence the adjacent buildings and comfortableness of human body in some boundary，and may lead collapsible loess to vibration subsidence when the energy is high enough. So the effect of vibration on adjacent buildings and comfortableness of residents need to be paid attention to；and the construction parameters need to be controlled when constructing in urban areas or compression building areas.

Key words

soil mechanics；collapsible loess；dynamic compaction；vibration；comfortableness；vibration- subsidence

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