

真空联合堆载预压下软土路基的位移和孔压监测分析

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ANALYSIS ON DISPLACEMENT AND POREWATER PRESSURE OF SOFT SOIL FOUNDATION UNDER VACUUM-SURCHARGE PRELOADING

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- 摘要
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全文: PDF (593 KB) HTML (KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 根据某一级公路软土路基的各类监测数据结果,详细地分析了地表沉降、孔隙水压力、土体水平位移等随时间和空间的变化规律,结果表明:淤泥层的沉降量占路基总沉降量的65%,低液限黏土层(15m以下)的水平位移较小,这与其土体强度较大有关;由于过快的填筑速率可能促使总的超静孔隙水压力大于0,所以在堆载过程中需要对孔压数据进行密切观测,以防止路基失稳;加固区30m以外基本无地表水平位移,软基处理过程不会对江堤安全性产生影响;结合孔压和土体分层沉降可知,真空联合堆载预压的有效影响深度可以达到排水板以下2m的范围。

关键词: 真空联合堆载 监测 土体水平位移 孔隙水压力 沉降

Abstract: This paper is based all kinds of soft soil foundation monitoring results of a first-class highway. The monitoring data of the foundation surface settlement, porewater pressure, soil horizontal displacement variation rules of time and space are analyzed in detail. The results show that about 65 percents of the total settlement of foundation is due to the silt layer. The horizontal displacement of low liquid limit clay layer (under 15m) is smaller. It is related to its bigger soil intensity. Excessive fast filling velocity can make the general excessive porewater pressure above zero. Therefore close observation of the data of pore pressure is needed in surcharge preloading process in order to prevent the foundation instability. There is nearly no surface horizontal displacement at more than 30m outside the reinforced area, which has no effect on river embankment security. Combined with the monitoring data of porepressure and layered settlement, the effective influence depth of the foundation by vacuum combined surcharge preloading can reach to about 2m.

Key words: Vacuum-surcharge preloading Monitoring Soil horizontal displacement the porewater pressure Settlement

收稿日期: 2011-07-01;

基金资助:

国家自然科学基金项目(49972089 40372122, 40911120044, 40902077, 40372122, 2011J014)资助

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引用本文:

. 真空联合堆载预压下软土路基的位移和孔压监测分析[J]. 工程地质学报, 2012, 20(1): 116-122.

. ANALYSIS ON DISPLACEMENT AND POREWATER PRESSURE OF SOFT SOIL FOUNDATION UNDER VACUUM-SURCHARGE PRELOADING[J]. Journal of Engineering Geology, 2012, 20(1): 116-122.

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