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岩土工程地质

颗粒物对风积沙压实特性影响研究

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摘要:

本文从颗粒物质的角度探讨了风积沙的压实特性和机理。研究表明,风积沙的重型击实试验曲线呈"双驼峰"形式,表明风积沙具有干压实的特性,水在风积沙的压实过程中扮演着不同的作用|室内振动试验表明振动加速度及振动时间影响着风积沙"巴西坚果效应"与"反巴西坚果效应"之间的转化,从而影响风积沙的振实密度,二者均存在一个产生最大振实干密度的最优值。现场试验通过控制机械参数(振幅 $A=0.4\text{mm}$,频率 $f=48\text{Hz}$)在压实5遍的时候,可使压实度达到96.8%, CBR 值达到25.3,均能满足《公路路基设计规范》要求。

关键词: 颗粒物 风积沙 压实机理 重型击实 振动压实

RESEARCH ON COMPACTION CHARACTERISTICS OF AEOLIAN SAND IN THE VIEW OF GRANULAR MATTER

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Abstract:

We took aeolian sand as a kind of granular matter and studied its compaction characteristics in the view of granular matter. According to the results of the laboratory compaction test, a compaction curve was plotted which was quite different from the clay's and was similar to double hump in shape. The two peaks in the curve meant that aeolian sand can be well-compacted whether it was dry or contained some water and water played different parts in the compaction process. and according to the results of vibrating compaction test, we can know that it was vibration acceleration and vibration time that affected the transform between Brazil-nut effects and anti-Brazil-nut effects, which also affected the compaction density. there were optimization values for both vibration acceleration and vibration time in that condition a optimized compaction density can be acquired. Also, field compaction tests were carried out (the amplitude of the machine was 0.4mm and the frequency was 48 Hertz). When the roadbed was compacted 5 times the degree of compaction was 96.8% and the value of *CBR* was 25.3 which were quite acceptable in the Specifications For Design Of Highway Subgrades.

Keywords: Granular matter Aeolian sand
Compaction mechanism Weighty tamping
Vibration compaction

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