

饱和砂土液化后强度与变形特性的试验研究

Experimental study on strength and deformation characteristics of saturated sand after liquefaction

中文关键词: [饱和砂土](#) [液化后变形](#) [应力应变关系](#) [循环加载](#) [单调加载](#) [统一本构模型](#)

英文关键词: [saturated sand](#) [post liquefaction strain](#) [stress strain relationship](#) [cyclic loading](#) [monotonic loading](#) [unified constitutive model](#)

基金项目:

作者 单位

[王艳丽](#) 1 [同济大学 岩土及地下工程教育部重点实验室, 上海 200092](#); 2 [同济大学 地下建筑与工程系, 上海 200092](#)

[王勇](#)

摘要点击次数: 389

全文下载次数: 266

中文摘要:

利用双向振动三轴试验装置,进行了饱和砂土液化后静力再加载试验。从砂土受振动荷载结束后所处的拉伸、压缩两种状态出发,对饱和砂土液化后的强度变形特性进行分析,研究了液化程度和围压对饱和砂土液化后不排水变形特性的影响。试验结果表明:振后处于拉伸状态的试样,液化后的变形由低强度段、超线性强度恢复段和次线性强度恢复段三段组成;振后处于压缩状态的试样,液化后的变形则只有次线性强度恢复段。提出了统一描述两种状态下砂土液化后应力应变关系的三阶段模型,并给出了模型参数的推导过程。与试验结果对比显示,该模型的预测值与试验值吻合较好,该模型有较好的适用性。

英文摘要:

The monotonic loading tests on saturated sand after liquefaction were carried out by using dynamic triaxial testing system. The strength and deformation characteristics of saturated sand for test samples subjected to tension or compression after cyclic loading were analyzed respectively. The effect of liquefaction degree and confining pressure on undrained deformation characteristics of saturated sand were studied. It is found that the variation of post liquefaction strain is composed of three stages, including the low intensive strength stage, superlinear strength recovery stage and sublinear strength recovery stage, if the sand is in tension state at the end of cyclic loading. Whereas, the post liquefaction strain will be sub linear strength recovery stage only if the sand is in compression state at the end of cyclic loading. The unified post liquefaction constitutive model for describing the sand in tension or compression states at the end of liquefaction is proposed and relevant parameters are deduced. The predicted results using this model are in good agreement with experimental data.

[查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

您是第783992位访问者

主办单位: 中国水利学会 出版单位: 《水利学报》编辑部

单位地址: 北京海淀区复兴路甲一号 中国水利水电科学研究院A座1156室 邮编: 100038 电话: 010-68786238 传真: 010-68786262 E-mail: slxb@iwahr.com

本系统由北京勤云科技发展有限公司设计