

探討莫拉克風災後高雄六龜地區堆積土壤滲透性和工程性

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摘要 2009 年莫拉克侵襲南台灣，造成高雄荖濃溪衍生非常多土石流和邊坡破壞，六龜地區尤其嚴重，而許多崩積土壤整治後被應用於回填工程，而其工程特性有必要予以了解。本研究以高雄六龜砂土添加不同細粒料含量，並控制相同乾土單位重($\gamma_d=17.07\text{kN/m}^3$)、尖峰軸差應力($\Delta\sigma_p=290\text{kPa}$)和相對密度($D_r=30\%$)進行靜三軸試驗和動力三軸試驗，探討其力學行為與工程性。由靜三軸壓密不排水試驗結果顯示，細料於不同含量增加其水壓力均在加載後會急遽上升，孔隙水壓無法消散下內摩擦角有下降的趨勢，此外，滲透係數也隨細料增加而降低，而壓密係數的減少而使壓密時間將會增加將造成排水不易。此外動三軸結果顯示，細粒料含量增加，土壤受反覆加載作用下，抗液化能力愈來愈低，容易導致土壤液化。整體而言，若將高雄六龜砂土用於工程回填，孔隙水壓力的快速增加可能導致地震液化、邊坡或土石流等破壞現象。

關鍵詞：莫拉克颱風、高雄六龜砂土、工程特性。

Investigations on the Permeability and Engineering Properties of Sandy Soils Obtained from Liukuei, Kaohsiung City after the Attack in Morakot Typhoon

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ABSTRACT In 2009, Morakot typhoon attacked seriously southern Taiwan, and gave results in many flow debris and slope failures near Laonung River, which is especially dangerous in the Liukuei area. While many deposit mass after the disaster are used to construction materials, it is necessary to investigate their engineering properties. The main purpose of this study is to study related permeability and engineering properties of sandy soils obtained from Liukuei with different fines content and three conditions including with same dry density ($\gamma_d=17.07\text{kN/m}^3$), deviator stress ($\Delta\sigma_p=290\text{kPa}$), and density index ($D_r=30\%$). All the soils on the research were obtained from in the site at Liukuei. A series of tests were conducted by using conventional triaxial test and cyclic triaxial test. Both of static triaxial test and cyclic triaxial test results show that the trend of pore water pressure of the specimen increase very fast for every specimen. But permeability test results of the specimens show the results are decreasing with fines content, and their results are not high. These findings can be a negative dangerous potential for those areas during earthquake, slope slides and debris flow. In addition, the consolidation coefficient and dissipation drainage are discussed also in the article

Key Words : Morakot typhoon, Liukuei sand, Engineering properties..

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