

Comparative Analysis of Residual Shear Depiction and Grain Distribution Characteristics of Slide Soil Profile Sections

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Abstract : Residual shear characteristics of slide soil profile sections (SSPS) were examined using ring shear tests to know the relative residual shear behaviors among the sections of slide soil. The multistage-multiphase shearing techniques were employed to perform the experiment for each soil specimen continuously towards large displacements. The grain distribution analysis of SSPS samples was characterized by coarsening upward from bottom slip to the top sections; however, the slip surface was considered as a sheared zone that endorses their low shear resistance for failure. There is an average range of 1-2.5 mm axial displacement on each stage of loadings and phases of shearing that depicts the significant effect of dilation and compression of soil specimen. The middle section has the largest consolidation percentage (10-29%), and vertical displacement compared to other sections and showed high shear strengthening behavior having maximum shear stress of 189kPa at 240kPa loading compared to basal and top sections. It is found that the middle section of SSPS has relatively high shear resistance behavior for large displacement shearing. The residual shear assessment indicates that there is a significant influence of large displacement and rate on the friction coefficient behaviors; it resulted in shear weakening effect to attain their residual condition.

Keywords : comparison, displacements, residual shear stress, shear behavior, slide soils

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