

Experimental Study on Stabilisation of a Soft Soil by Alkaline Activation of Industrial By-Products

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Abstract : Utilising waste materials, such as fly ash (FA) and slag (S) stockpiled in landfills, has drawn the attention of researchers and engineers in the recent years. There is a great potential for usage of these wastes in ground improvement projects, especially where deep deposits of soft compressible soils exist. This paper investigates the changes in the strength development of a high water content soft soil stabilised with alkaline activated FA and S, termed as geopolymer binder, to use in deep soil mixing technology. The strength improvement and the changes in the microstructure of the mixtures have been studied. The results show that using FA and S-based geopolymers can increase the strength significantly. Furthermore, utilising FA and S in ground improvement projects, where large amounts of binders are required, can be a solution to the disposal of these wastes.

Keywords : alkaline activation, fly ash, geopolymer, slag, strength development

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