Soft Clay Improvement Using FBC Fly Ash

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ABSTRACT

Ground improvement using admixtures such as fly ash has been practiced for quite some time, and generally conventional fly ash, e.g., Type C, has been used. This paper presents results from a comprehensive laboratory study involving use of fluidized bed combustion (FBC) fly ash from a coal combustion power plant in Guayama, Puerto Rico. The FBC fly ash from this power plant has a unique chemical composition, which required an assessment of the feasibility of its use as a ground improvement admixture. The experimental study involved a detailed characterization of the FBC fly ash and soft clay soils selected for the project. Soil samples mixed with different percentages of FBC fly ash were compared with samples treated with two conventional admixtures (Type C fly ash and lime). Samples were mixed, compacted, and cured using conventional procedures. Strength, CBR, and deformation properties were measured after several curing times (7, 14, 28 and 40 days). At each testing time, microscopy of the samples was carried out to evaluate delayed ettringite formation. The paper presents results and the feasibility of FBC fly ash for soft clay improvement is discussed.

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