

عنوان مقاله:

Characterization of fly ash stabilized residual laterite

محل انتشار:

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خلاصه مقاله:

The effective use of residual laterite soils is usually hindered because of their mineralogy and high fines content. This paper studied the potential improvement in the geotechnical and mineralogical properties of fly ash-treated residual laterite collected from Southwest Nigeria. Some physical and geotechnical properties, such as plasticity, compaction, unconfined compressive strength (UCS), and California Bearing ratio (CBR) of untreated and treated laterites were determined using ASTM standard methods. Stabilization was achieved by mixing the laterite with varying proportions (0%, 3%, 6%, 9%, 12%, and 15% by mass of dry laterite) of fly ash. Mineralogical analysis of untreated and treated laterite was done using the X-ray diffractometer (XRD). The results showed a slight initial increase at low proportions of fly ash (at 3%) in the plasticity properties and a subsequent decrease (of up to 65%) afterward. The UCS and CBR of the treated laterite increased over 100% (maximum UCS 110% and maximum CBR 183%) at 6% fly ash content. XRD analysis showed the formation of new minerals, predominantly portlandite, within the stabilized soils. This study confirmed that using fly ash for the stabilization of residual laterite soils is potentially viable for road construction.

کلمات کلیدی:

California bearing ratio, Mineralogical analysis, Residual tropical laterite, Southwest Nigeria Soil, Xrd analysis

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