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Geotechnical characterization of excavated soils for reuse as road embankments and subgrades

In this paper, we present a geotechnical study of excavated soil from a road construction site in Ouagadougou. The excavated material is transported to dumps to make way for lateritic gravel from borrow sites. However, the increasing distance and scarcity of these sites, as well as the costs associated with transport and environmental impacts, are encouraging in-situ soil reuse after thorough geotechnical analysis. The first phase of this study, described here, focused on a physical analysis of the soil, including determination of solid particle density, methylene blue value, morphological analysis, Atterberg limits, Proctor characteristics, CBR and IPI bearing capacity indices, saturation permeability, and retention curve. The results enabled us to classify this soil as F2 material according to GTR 2023, indicating that it can be reused as road embankments, except in the event of heavy or moderate rainfall. Its use in its current state requires intense compaction for low-level embankments (≤ 5 m). However, due to the water-sensitivity of these soils due to the clay fraction they contain, treatment is often required for use in subgrades. These soils are generally treated in situ.

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