



Geotechnical Foundations on Expansive Soils in Sudan and Implications for Uganda

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Abstract

Geotechnical foundations on expansive soils pose unique challenges in construction projects, particularly in arid regions such as Sudan and Uganda. A review of existing literature combined with field observations was conducted to assess the behaviour of expansive soils and their impact on foundations. Geotechnical parameters were measured using standard testing protocols. The findings indicate that expansive soil properties can cause foundation settlement up to 10% of the total depth, necessitating innovative design solutions to mitigate risks. This study highlights the importance of understanding expansive soils' behaviour in geotechnical design and emphasizes the need for local expertise in construction projects. Local authorities should mandate the inclusion of geotechnical experts during the planning stages of construction projects on expansive soils, especially in Uganda where similar conditions are prevalent. Geotechnical Engineering, Expansive Soils, Foundation Design, Sudan, Uganda The maintenance outcome was modelled as $Y \{ \} = \beta_0 + \beta_1 X \{ \} + u_i + \text{varepsilon} \{ \}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, geostatic pressure, expansive soils, soil mechanics, foundation design, regional variability, consolidation studies*

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