

Laboratory Testing Regime for Quantifying Soil Collapsibility

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Abstract : Collapsible soils go through radical rearrangement of their particles when triggered by water, stress or/and vibration, causing loss of volume. This loss of volume in soil as seen in foundation failures has caused millions of dollars' worth of damages to public facilities and infrastructure and so has an adverse effect on the society and people. Despite these consequences and the several studies that are available, more research is still required in the study of soil collapsibility. Discerning the pedogenesis (formation) of soils and investigating the combined effects of the different geological soil properties is key to elucidating and quantifying soils collapsibility. This study presents a novel laboratory testing regime that would be undertaken on soil samples where the effects of soil type, compactive variables (moisture content, density, void ratio, degree of saturation) and loading are analyzed. It is anticipated that results obtained would be useful in mapping the trend of the combined effect thus the basis for evaluating soil collapsibility or collapse potentials encountered in construction with volume loss problems attributed to collapse.

Keywords : collapsible soil, geomorphological process, soil collapsibility properties, soil test

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