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Parameterized Study of the Swelling of Reconstituted Clay Soils

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ABSTRACT

The swelling of the clay is a natural phenomenon which occurs each time the water content varies. Its width depends on many factors. Some of these factors are specific to material. Others are linked to external factors like the variation of the water content or the state of loading. In this article, we carried out a study parameterized on samples of reconstituted clay soils. We decided to vary two parameters: the rate of fine particles and the consolidation statement. The principal results which rise from this study reveal a linear relation between the rates of clay particles and pressure of swelling. For the amplitude, this relation is linear to become nonlinear when the potential of the swelling heaving becomes strong. Work also concludes with independence from parameters from swelling compared to the initial water content. On the other hand these parameters seem to be related on the water content final and the amplitude of variation of this one during the tests. This relation is stronger for the pressure than for the amplitude. The parameters of swelling vary also linear according to the initial dry volume weight, even if relation tends to become also nonlinear for the soils strongly swell. The slopes of the right-hand sides that are binding the pressure to the initial dry volume weight increase when the pressure of consolidation increases.

KEYWORDS: swelling, clay, water content, consolidation, laboratory tests.

INTRODUCTION