

# SWELLING BEHAVIOR EVALUATION OF A LIME-TREATED EXPANSIVE SOIL THROUGH CENTRIFUGE TEST

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**Abstract:** The main objectives of this research are to investigate the effect of hydrated lime (HL) treatment on the swelling behavior of a natural expansive soil, Eagle Ford clay from Texas, through centrifuge testing. So far, no studies have been performed using the centrifuge to analyze the swelling reduction in expansive soils by stabilization treatments. Also, no studies have measured the improvement of lime treatment efficiency due to variables controlled during preparation of lime-soil mixtures, such as compaction moisture content, compaction dry density, and the applied effective stress. From the analysis of the swelling versus time curves, three values were defined to examine the swelling behavior: the swelling potential (Sp), the primary swelling slope (PSS), and the secondary swelling slope (SSS). Assessment of the lime treatment efficiency, as quantified by the swelling potential reduction ratio (SPR) indicates that lime dosage requirements can be decreased by increasing the compaction moisture content and/or reducing the compaction dry density. Also the hydrated lime dosage needed to prevent swelling depends on the applied g-level (i.e., applied stress).

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## Full reference:

Belchior, I.R.M., Casagrande, M.D.T., and Zornberg, J.G. (2017). "Swelling Behavior Evaluation of a Lime-treated Expansive Soil through Centrifuge Testing." *Journal of Materials in Civil Engineering*, ASCE, Vol. 29, No. 12, December.

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