



Geotechnical Seminar

Expansive Clay Behavior from Nano through Macro

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Abstract.

Damage to civil engineering infrastructure resulting from movements and swelling pressures associated with expansive clay occurs commonly throughout the world and is particularly notable in the state of Texas. Current geotechnical engineering understanding of expansive soil behavior and corresponding mitigation of expansive soil hazards are derived primarily from macroscopic observations of bulk behavior and empirically-based classification and heave prediction methodologies. Conversely, this seminar describes the author's recent efforts to approach expansive soil behavior from a micro-mechanical context. Clay-water interactions are considered within the so-called "crystalline" swelling regime, whereupon particle swelling occurs via the sequential adsorption of discrete layers of water between the clay mineral interlayers. Results from humidity-controlled sorption, volume change, and swelling pressure experiments are considered in light of a series of microstructural particle fabric models to investigate how particle scale volume changes are up-scaled to macroscopic volume changes and corresponding pressures.

When and Where.

Thursday, October 4, 3:00 PM
CE Building, Room 104

Event Series Website.

<http://geoinstitute.tamu.edu>

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