

## Development of Compressive Pier Force in Expansive Soils

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### **ABSTRACT**

Axial forces in piers beneath buildings constructed on expansive soil sites will vary with time depending on the wetting pattern and expansive characteristics of the foundation soils. Furthermore, the pier force depends on the deformation characteristics (stiffness) of the foundation. This paper presents a methodology for predicting pier force and foundation stiffness based upon both theoretical considerations and measured deformations. Wetting patterns that are considered include both infiltration from the ground surface and wetting from a deep source. Foundation stiffness is determined by two different methods. One method is based on beam deflection theory and the other utilizes measured heave values. The results of the analyses are applied to observed data measured on a large building. Although measured pier force values are not available, the results demonstrate the range of pier force values that may be expected and demonstrate the application of the methodology.

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