

## LIFTING AND PROTECTING RESIDENTIAL STRUCTURES FROM SUBSIDENCE DAMAGE USING AIRBAGS

by

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**Abstract.** Conventional practice in protecting residential structures from subsidence damage concentrates on saving the superstructure. The foundation is sacrificed, even though it represents the structural component with the greatest replacement cost. In this study, airbags were used to lift a 20 ft x 30 ft structure to test their ability to protect both the foundation and superstructure from ground settlement.

Two contiguous sides of the test foundation were unreinforced, and the other two contiguous sides incorporated footing and wall reinforcement. The airbags successfully lifted the structure without causing damage, even on the unreinforced sides. This paper gives a procedure for determining airbag spacing, and describes installation and operation techniques of the airbags. The paper then focuses on the performance of the airbags in lifting the structure, and shows that airbags can preserve existing foundations during subsidence movements.

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