CHANCE®

UNDERPINNING ANCHORING REPORT

A CASE HISTORY

Project:
Charles Residence, McCormick Ranch, Scottsdale, AZ

Geotechnical Engineer:
Thomas Hartig & Associates, Chandler, AZ

Problem:

Jerry Hargrave told high-school friend Mr. Charles that any distressed property in Scottsdale could be fit with Chance HELICAL PIER® Foundation Systems anchors. Mr. Charles took the challenge and located a house in McCormick Ranch that had developed a "sunken" living room.

Two attempts to stop the movement had proved futile: Pressure grouting and pipe piles.

Pressure grouting, if done properly, can be effective but often proves costly. It is difficult to control just where grout will flow in the ground. For example, a weakened sewer line may break, providing a low resistance void where much wasted grout may go. If the pressure grout material is not founded on a good bearing stratum, the extra weight may cause further settlement of a foundation.

Because pipe piles are pushed into the ground using the foundation as a reaction, it's not always possible to get the piles into adequate bearing material. In such a case, a pipe pile's capacity is derived from its skin friction with the soil. Since the pipe can be pushed only as much as the foundation will react, there is no way to provide any safety factor.

Chance anchors are installed independently of the foundation. By measuring installation torque, the capacity of a screw anchor can be determined. A known safety factor can thus be established.

Repair solution:

Since geotechnical engineer Tom Thomas had not seen a screw anchor installed, he was skeptical.

A test anchor was installed to determine feasibility. It was driven about 24 feet into bearing stratum that could support 25 kips.

More than 40 production anchors were driven, from 20 to 40 feet deep. Because the existing footing was not reinforced, the anchors were spaced 5 feet apart on the exterior walls. Using Chance underpinning brackets, the foundation was lifted 3 inches. After leveling the structure, a new floor was poured.