Owner: United States Government
Location: San Antonio, Texas
General Contractor: JSR, Inc.
EOR: Cutler Gallaway Services, Inc. | Earl Cutler, P.E. (210) 496-3326
Contract Amount: $323,496.00 | **Maximum Pile Load:** 16 kips | **Completion Date:** October 2014

PROJECT SUMMARY

Fort Sam Houston Buildings 124 & 151

Project Description: Fort Sam Houston contains many historic barracks that were built at or around the turn of the 20th century. These barracks housed U. S. soldiers stationed at Fort Sam Houston, San Antonio, Texas. The barracks are very large structures, 2 to 3 stories in height, with some also having basements. They were constructed with a limestone foundation that extended 2' to 4' feet below grade and 3' to 5' feet above grade. These footings carried full masonry walls to the roof and the attributable floor and roof loads. Over the course of time, the volatile nature of the expansive soils present in the area caused substantial movement of the foundation systems. Power Lift initiated the first foundation repairs to buildings of this type in 1994. Base personnel continually monitored the structures and documented additional extensive cracking of the masonry in other buildings. The recording of continued foundation movement prompted additional foundation remediation. This project was the third time, in the last 20 years, that Power Lift has been called upon to help restore these historical building's foundations.

Subsurface Conditions: Moisture sensitive clays were identified in the geotechnical investigation. Extremely high PI's, in excess of 50, were present at the site. The stiff clays extended to a depth of approximately 30' feet below grade in almost all of the borings. As well, the soil's moisture content was found to be low. As additional soil shrinkage was predicted, Government personnel decided that deep foundation support was needed.

Design Details: FSH personnel retained Cutler Gallaway Services, Inc., to design the foundation remediation system for the buildings experiencing substantial movement. As the limestone foundation

PROJECT SUMMARY — FORT SAM HOUSTON BUILDINGS 124 & 151 (CONTINUED)

was not suitable for point bearing underpinning, an alternative remediation design was required. Understanding that the clays were very stiff, Earl Cutler, P.E. and Tom Gallaway, P.E. determined that a small diameter steel pile would be ideal for penetrating the unstable clays, and transmitting the foundation loads to deeper, more stable soil layers. In order to transfer the foundation loads to the piles, Messrs. Cutler and Gallaway developed a plan utilizing two concrete beams that were dowelled to the existing limestone footing and cast parallel to the existing footing. This was the same system that had been implemented previously with great success. The footings were cast with pre-manufactured embed pile brackets that received the steel piles.

Once the concrete was cast and had achieved the proper strength, Power Lift mobilized to the site and installed the required piles. Utilizing two crews with a total of six men, Power Lift installed a total of 198 piles in 6 days. Each pile was driven through the soil and seated at the design load. During pile installation, each pile was proof loaded to 250% of its design load. Once all piles had been tested to the required capacity, each pile was individually loaded and locked off at the specified design load. Due to the rapid pace of Power Lift's installation, JSR, Inc. was able to gain a full week on the overall project completion schedule. This job proved to be another successful project delivered ahead of time and in budget with no change orders, which made both JSR and the government very happy.