



Owner: State Of Louisiana

EOR: Smith Engineering | Brian Smith (318) 741-1088

Completion Date: November 2013 | Contract amount: \$113,646.00

Maximum Pile Load: 30 kips

PROJECT SUMMARY

Bossier City Readiness Center

Project Description: This masonry building is home to offices of the Louisiana National Guard as well as the 156th Army Band. Over time, settlement had occurred causing damage to the exterior brick veneer and the interior CMU wall. The cause for the settlement was attributed to considerable building loads combined with the extremely poor soils on which the building was built. Before work began, the foundation was believed to be a monolithic slab supported by a perimeter grade beam. Once excavation began, Power Lift discovered that the perimeter grade beam of the building was significantly deeper than anticipated. Along with the increased depth of the grade beam, spread footings were also discovered along the perimeter of

the building beneath the grade beam at the column locations. The load of the building was dispersed onto the spread footings instead of evenly along the perimeter grade beam. This discovery necessitated a complete redesign of the repair plan.

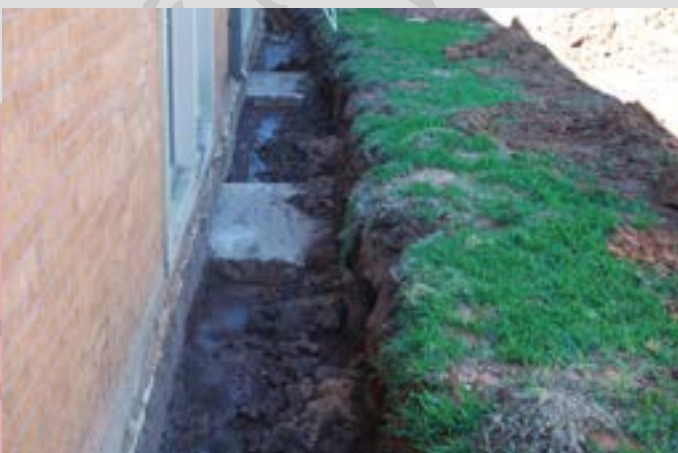
Subsurface Conditions: The site was located in an area consisting of expansive clays, capable of significant changes in volume when subjected to changing moisture content within the soil mass. A test pile was driven to a depth of 50'. Soft clays were encountered to a depth of 30' and gradually increased in stiffness to the depth of 50'.

Design Details: After discovery of the spread footings, Power Lift, along with Smith Engineering, redesigned the pile layout for the affected area



PROJECT SUMMARY — BOSSIER CITY READINESS CENTER (CONTINUED)

of the building. The original design called for 20 helical piles with a working capacity of 13 kips spaced evenly around the perimeter grade beam of the affected area. The new design required 37 piles in lieu of the original 20. The capacity of each pile was also changed to 30 kips in lieu of 13 kips. For the Project, Power Lift and Smith Engineering chose a combination helix of 12"/14"/14" O.D. × 3/8" thick grade 50 plate for the helical lead section. The pile shaft selected was 2 7/8" O.D. × .262 wall thickness 55 KSI tube. The depth that the piles were installed ranged from 32'-60'. Each pile had a working capacity of 30 kips with an ultimate capacity of 60





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tips. In order to achieve these capacities each pile was installed with a minimum installation torque of 7,000 ft/lb.

In order to transfer the load of the building from the footings to the helical piles, the footings had to be cut back to the face of the grade beam. In order to avoid disturbing the building during the process, a helical pile was installed on either side of each footing under the grade beam. This provided additional support to the structure, while the footings were being demolished. Once the footings were demoed, two additional piles were

installed at the location where the footing had been removed for a total of four piles at the previous location of each footing. Once the installation of the piles was complete, Power Lift began the process of backfilling the soil that had to be excavated. The soil that was removed and stockpiled was brought back and mechanically tamped in place. The site was re-graded and new sod was planted to bring the building back to its original appearance. The project was completed on time and within the approved budget.

