

# CASE STUDY

## 13<sup>th</sup> Street Bridge Project

Gainesville, FL

Installer: Ram Jack Solid Foundations • Gainesville, FL • 386.462.3001

2012



**Project Description:** As part of a renovation project by the City of Gainesville Community Redevelopment Agency (CRA), an old rail bridge was being converted into a pedestrian bridge. A local commercial contractor was adding several retaining walls, stair cases and gathering areas.



During tropical storm Debbie, the foundation of one of the newly constructed landing/gathering areas was undermined. The heavy rains eroded a large area of bearing soil from beneath the foundation of the structure. The loss of bearing soil caused the structure to settle in the order of 1 to 4 inches. The construction of the structure consisted of 1-foot thick concrete walls that were 12-feet tall bearing on a spread footing foundation. Because of the settlement, the walls became misaligned and several large stress fractures developed. The City of Gainesville needed a quick and perminate solution before the entire structure was lost so they contacted the experts at Ram Jack.



**Solution:** The immediate concern was to prevent the collapse of the structure. The contractor formed around the perimeter of the footing where it was undermined. Several yards of grout were pumped into the void space to reestablish a temporary bearing surface.

The site consisted of saturated clay soil which made for a difficult work environment. Dry fill landings had to be constructed for installing the piles and all-around workability.

The landing was designed to support a courtyard and a perminate train car. Based on the construction weight, occupancy and surcharge loads, the wall loads were calculated to be in the order of 9 kips per linear foot. Ram Jack's 4021 side load bracket was used on 2 7/8"

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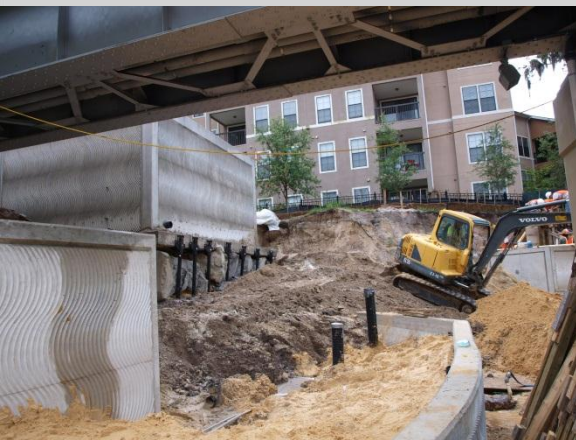
2012



**Continue:** diameter helical piles to raise and stabilize the structure. The grout that was placed in the void space had to be partially removed at the pile placement locations in order to place the underpinning brackets and piles.



As can be seen from the photographs to the left, some of the piles had unbraced lengths up to 5-feet above grade. Ram Jack's patented internal threaded connection, which is included in Ram Jack's ICC-Evaluation Service Report (ESR-1854), allows the exterior surface of the pile to be smooth and homogeneous. This allows an exterior sleeve of infinite length to be placed over the upper portion of the pile. The length of the exterior sleeve is custom designed for projects like these to increase the stiffness and bending stress resistance of the pile at it's critical section. This allows the pile to support higher design loads and longer unbraced lengths than other systems while still using a smaller more economical pile.



**Conclusion:** The piles were designed for a working load of 30 kips and spaced at approximately 40-inches on center around the settled portion on the structure. After all the piles were installed, a synchronized hydraulic lift system was used to raise the structure. During the lifting operation, the walls were realigned and closure of the stress cracks were gained.

Ram Jack was able to accurately and safely restore the structure to its original position and stabilize it to prevent its eminent collapse.

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