

## **End Bearing Enhancement via Post Construction Preload / Reload**

Drilled shafts are large-diameter cast-in-place concrete structures that can develop enormous axial capacity to resist heavy loads from tall buildings, bridges, etc. They develop capacity from a combination of side shear resistance (some times called skin friction) and end bearing capacity (also called tip capacity). However, rarely is the end bearing capacity fully realized as a result of the excessive displacement required to develop it. USF researchers have developed design and construction methods to make full use of these enormous structures at a minimal amount of settlement by injecting a high pressure water cement slurry into the ground beneath the foundation.

Aside from an enormous boost in strength and quality assurance to these foundations, a considerable savings in the overall foundation cost is also realized.



**Grouting Cell at the base of the concrete reinforcement cage prior to installation deep into the ground.**



**Drilled shaft exhumed after testing to verify grout distribution.**

This research was funded by the Florida Department of Transportation, conducted by Dr. Gray Mullins, and has recently led to a pending university patent on the process.