

Tampa Bay Desalination Facility

Challenge:

The Tampa Bay Desalination Plant, originally designed in 2007, has been providing millions of gallons of drinking water for Florida residents. To accommodate a growing need for drinking water, the plant has undergone an expansion with system upgrades. The new facility utilized augered cast-in-place (ACIP) piles for the foundation expansion. GRL Engineers provided high and low strain dynamic testing to verify load bearing capacity and integrity for the new foundation.

Method:

High Strain Dynamic Load Testing was performed using our 5-ton APPLE system. The applied force was measured by means of strain gages affixed to a 14-inch diameter steel pipe force transducer placed on the pile top. The pile motion was measured by means of accelerometers attached to the sides of the pile. The permanent pile displacement was measured independently by means of a surveyor's tripod and site level. Multiple impacts were applied to the piles with a range of drop heights from 6 to 36 inches. The permanent pile penetration (i.e., set) from each impact was measured by means of a tripod and site level.

Additionally, pile integrity testing (PIT) was performed both before and after the high strain drop weight test.

Results:

CAPWAP analysis was performed with the PDA data recorded from an early hammer blow. CAPWAP analysis predicts the shaft and toe resistance distribution along the pile length. The analysis indicated that the measured pile capacity exceeded the reported factored design load x the engineer specified factor of safety of 2.0.

To learn more about GRL Engineers, visit www.grlengineers.com or email us at info@grlengineers.com.

Project Details

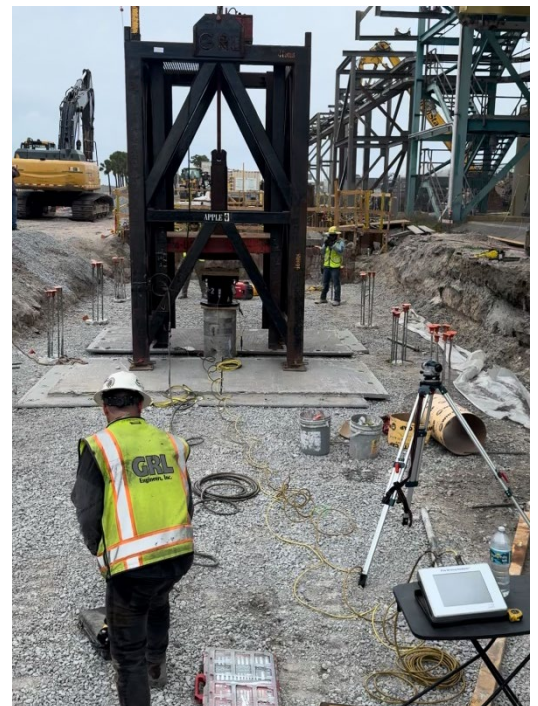
Client: Archer Western / The Walsh Group

Location: Tampa, Florida

GRL Office: Florida

GRL Services

- High Strain Dynamic Testing with APPLE
- CAPWAP® Analysis
- Low Strain Integrity Testing



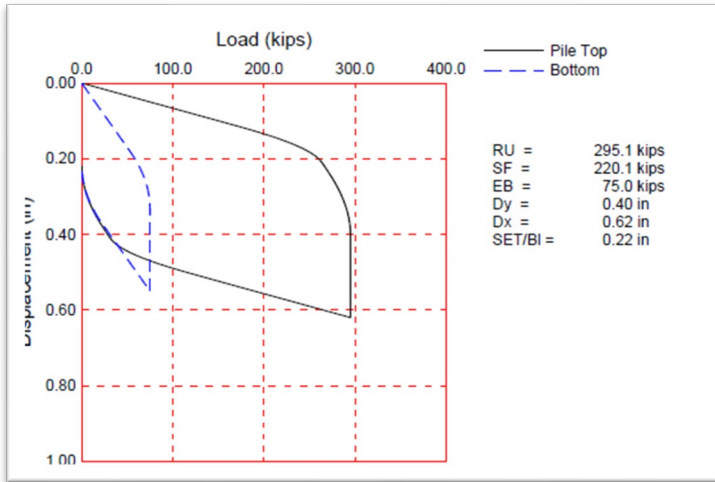


Figure 1. Load vs Displacement plot

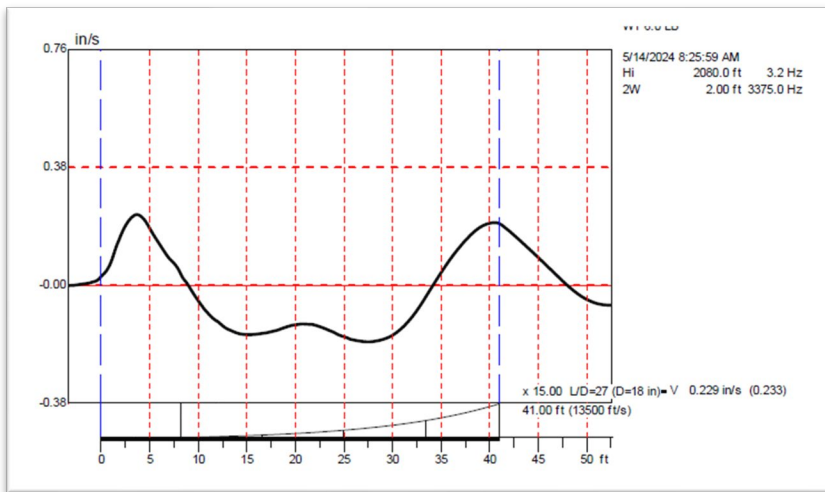


Figure 2. Low Strain Integrity Testing results before APPLE test

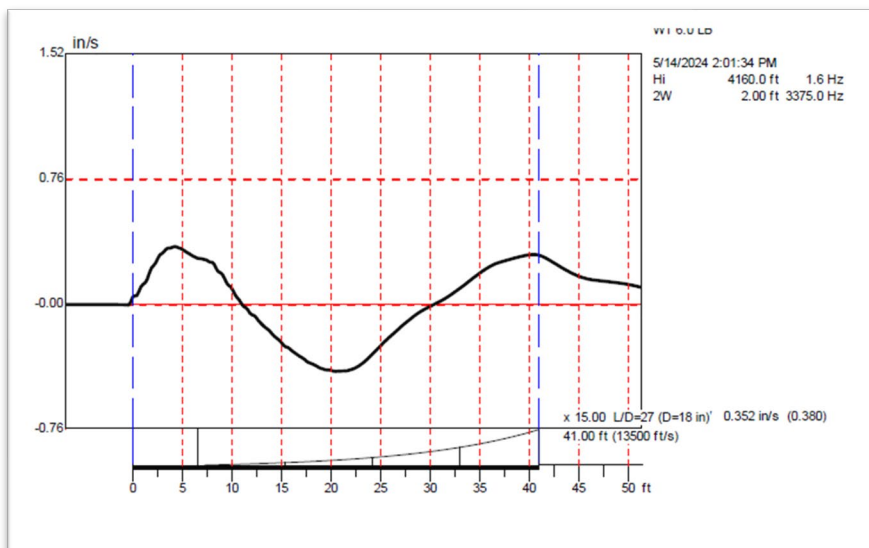


Figure 3. Low Strain Integrity Testing results after APPLE test