

## Southwest Florida International Airport Expansion

### Challenge:

The Southwest Florida International Airport in Fort Myers Florida underwent a \$1.1 Billion expansion in the second phase of the airport's reconstruction project. The airport expansion was an effort to accommodate an expected growth in passenger traffic, and was led by the Lee County Port Authority. The first phase of the project was a \$331 million expansion on the airport terminal. The second phase of this project looks to accommodate 10,000-15,000 travelers daily. GRL Engineers provided integrity testing on the auger cast in place piles which would be the foundation of the new structures.

### Method:

Thermal Integrity Profiling was utilized on Augered-Cast-in-Place (ACIP) piles throughout the job site. GRL was tasked with testing 5% of the 2,600 piles on the project (approximately 130 piles). For each ACIP pile, one Thermal Wire cable was instrumented to the full-length center bar. After grout was placed, a TAG or TAP-Edge data logger was connected to the wire and data acquisition began. The TIP data was then transmitted to the engineers for analysis and reporting of the assessed pile integrity.

Low Strain Integrity Testing (PIT) was performed on some of the augered cast piles in place to assess concrete integrity, where TIP testing was not pre-planned. The tested piles had a reported nominal diameter of 14-inches and in-place lengths of approximately 94 to 95 feet. Low-strain dynamic testing was performed by applying hand-held hammer impacts to the top of the tested pile. Pile top motion measurements (measured acceleration, converted to velocity) were obtained with an accelerometer affixed at the top of the pile.

### Results:

Sample TIP results can be reviewed in Figure 1, which presents the Measured Temperature vs Depth on the left plot and the soil/pile profile on the right plot. The temperature roll-off at the top of the pile is caused by heat loss due to the grout/air interface. Sample PIT results are shown below and to the right.

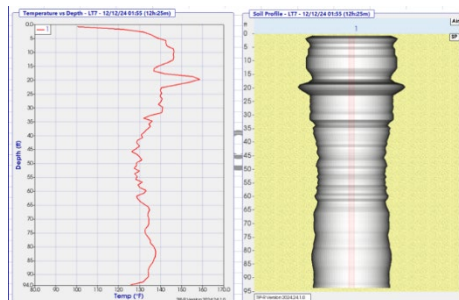


Figure 1 Sample Thermal Integrity Test

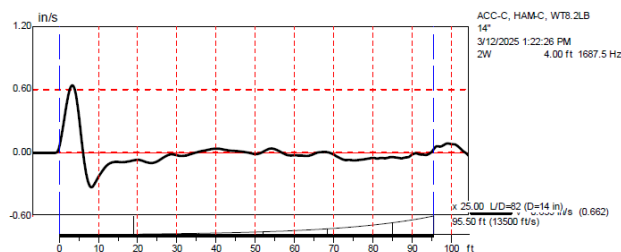


Figure 2 Sample Low Strain Integrity Test

### Project Details

**Client:** R.W. Harris, Inc.

**Location:** Fort Myers, FL

**GRL Office:** Florida

### GRL Services

- Thermal Integrity Profiling (TIP)
- Low Strain Integrity Testing (PIT)

