

Pile Integrity Testing

We are now offering an on-site Pile Integrity Testing service using a Piletest Pile Echo Tester (PET) which uses the Pulse-Echo method (PEM) for quick pile integrity testing (quality control) of piles.

ACS Testing Limited has been providing quality testing and materials consultancy to the construction industry since 1987. All works have the support of laboratories and resources within the ACS Group of Companies which allows for seamless project progression and completion.

Method

The PET is fully compliant to ASTM D5882 - 07(2013) Standard Test Method for Low Strain Impact Integrity Testing of Deep Foundations for pile integrity testing as well as additional standards.

The test is conducted by placing a transducer on the pile head surface and the pile is tapped with a lightweight plastic hammer. The resulting signal, or reflectogram, is captured and transferred to a computer by PET's digital accelerometer, providing real-time information about the length and shape of the pile.

In order to obtain the highest quality of recovered reflectogram, the piles under test should satisfy the following conditions:

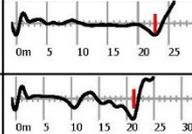
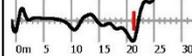
- The concrete should be tested no sooner than 7 days after casting or after concrete strength achieves at least 75% of its design strength, whichever occurs earlier.
- The pile head should be cleaned, accessible and free from debris.
- The top of the pile should consist of original, solid intact concrete.
- The pile cap or ground beam reinforcement must not be in place.



Capabilities

Since the sonic method is based on the use of stress waves, it can identify only those pile attributes that influence wave propagation. The following items may in many cases be detected:

- Pile length
- Cracking perpendicular to the axis.
- Joints and staged concreting.
- Changes in cross section.
- Distinct changes in soil layers.

Pile	Reflectogram	Length (m)	Details	Remarks
Pile 1		22.8m	02/01/1997 C:3950m/s Amp:80 Planned:22.5m Logger Avg:10	
Pile 2		21.3m	02/01/1997 C:3950m/s Amp:140 Planned:22.0m Logger Avg:10	Necking at 11.1m

Results

The first step in analyzing the reflectogram is carried out on site immediately following each test. This is completed by comparing the reflectogram to a mental picture of various pile shapes and their respective readings.

Anomalous readings that are readily identifiable, are noted on site and the recorded data may be subject to further analysis in the computer software to quantify better the extent of an apparent anomaly.

If after data processing there is still doubt over the pile quality, further investigation and remedial measures may be required.