

Foundation Test Gauge

The Foundation Test Gauge (FTG1) is a new compact pile and shaft inspection tool utilizing the Sonic Echo test method, otherwise known as the Pile Integrity Test (PIT).

Sonic Echo (SE) investigations are performed to evaluate to integrity and determine the length of deep foundations. The test can also be performed on shallow wall structures. The SE test can be performed on concrete, wooden and steel piles.

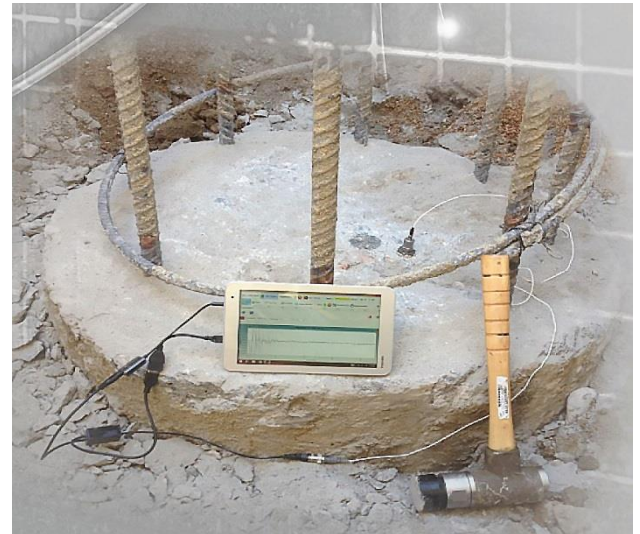
***Please note Tablet is not included**

How it Works

In a test with the FTG1, the foundation top is struck by a hammer and the response of the foundation is monitored by an accelerometer. A windows portable or tablet computer is used to collect the accelerometer output for interpretation.

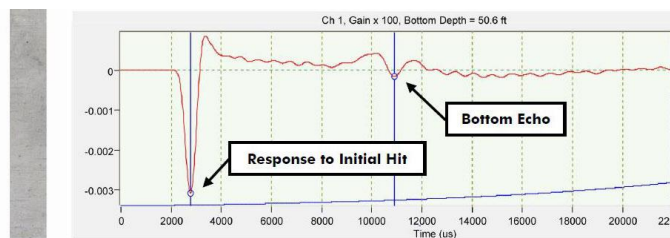
Sonic Echo

The Sonic Echo data is used to determine the depth of the foundation based on the time of arrival of the impact signal and an echo signal returning from the pile base. A reflector can be the bottom of the foundation or any discontinuity along the embedded part of the foundation, this enable SE to be used for defect location. In the SE data overleaf reflections in the data are used to calculate the depth of the first pile and the depth of the break in the second. Finally SE testing can be used to determine the existence of a bulb, a neck, or the bedding of the pile base.

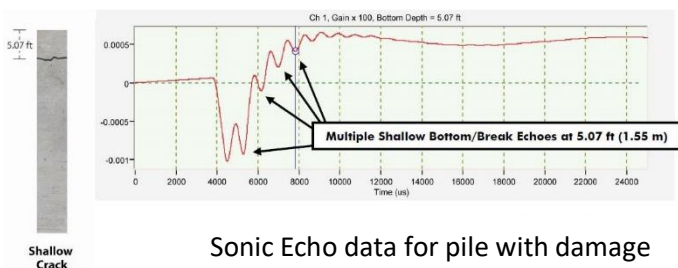


Applications

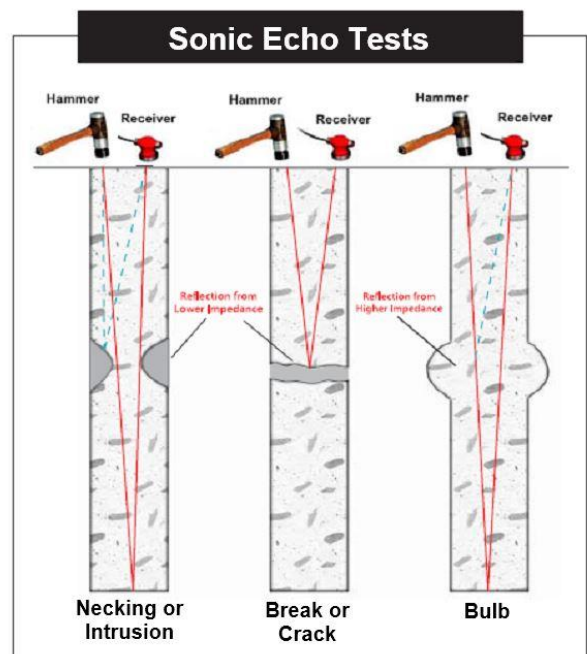
- Structural investigations where foundation depth is unknown
- Assessing the condition of foundations
- Investigation of damage to foundations
- Investigation of bulbs in foundations
- Inclusion of soil or water in cast piles
- Uncured or weak concrete in cast piles



Sonic Echo data for undamaged pile



Sonic Echo data for pile with damage close to surface



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Effectiveness

The SE method works best for columnar foundations such as piles and drilled shafts. Reflection events are clearest if there is nothing on top of the foundations (such as a column or pile cap).

Typically, SE tests are performed on shafts or piles of length to diameter ratio no more than 20:1. Higher ratios (30:1 or greater) are possible in softer soils.

Where a simple element such as a slab or footing rests on the pile, the thickness of the element must not exceed 1.7 times the diameter of the pile for the SE analysis to be interpretable.

Accuracy

Sonic Echo tests are accurate to within 5% in the determination of the depth of the foundation provided an independent measurement of the sonic wave velocity used in the depth calculation is made. This may be done using an Ultrasonic Pulse Velocity measurement.

In case the wave velocity is assumed based on the material type, SE tests are normally accurate to within about 10%.



Equipment Supplied

- Accelerometer
- Accelerometer Cables and Receiver
- Non-Instrumented hammer and impact tips
- FTG1 Software for data collection and analysis

About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclometers, Extensometers, Tiltmeters, Load Cells and Dataloggers