

Fugro LOADTEST Thermal Integrity Profiler (TIP)



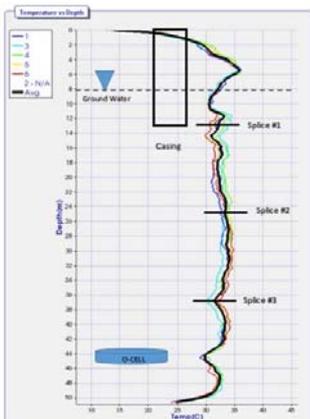
Thermal Integrity Profiler (TIP)



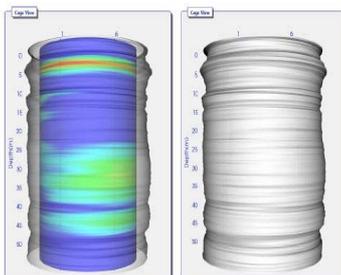
Thermal Acquisition Port (TAP)



Thermal cables with O-cell assembly



Example of measured temperature for each string vs depth



Example 3D Interpretation

OVERVIEW

The Thermal Integrity Profiler (TIP), supplied by Pile Dynamics Inc. of the USA, uses the heat generated by curing cement (hydration energy) to assess the quality of cast in place concrete foundations such as bored piles, continuous flight auger (CFA), drilled displacement piles, grout columns and barrettes.

TIP evaluates the concrete quality of the entire cross section, including outside the reinforcing cage, and along the entire length without length limitations. TIP measurements may be used to pinpoint areas of concern, estimate the actual shape of the pile and determine the concrete cover.

The TIP Thermal Wire System includes cables fitted with a series of thermal sensors spaced at every 300 mm and a Thermal Acquisition Port (TAP). The minimum number of vertical cables to be installed is determined by the foundation size. The Thermal Wires are attached to the reinforcing cage prior to connecting. The TAP automatically samples data from each embedded Thermal Sensor at user selected time intervals, typically 15 minutes. The TAP acquisition system is retrieved and the data downloaded after the peak temperature during curing has passed, usually around 3 to 5 days and can be analysed immediately.

ADVANTAGES

The TIP system allows a full profile assessment across the pile or barrette, including outside the reinforcement cage, providing quality assurance on the whole cross-section of the pile, producing an interpreted 3D image, a more complete interpretation that can be obtained from Cross Hole sonic coring. The position of the cage within the shaft can be determined and cover to concrete confirmed. All safety issues associated with the installation of Cross-Hole Sonic Logging tubes, especially at splicing and base level, are eliminated.

APPLICATIONS

The Thermal Integrity Profiler can be performed in foundation structures of various geometries, from nominally cylindrical piles (0.3 m to greater than 3 m) to diaphragm walls and barrettes. Providing there is a curing process resulting in heat generation, the TIP can be used for any cast in place foundation element.

The TIP is an ideal accompanying instrumentation system for our award winning O-cell® bi-directional static load testing technology, eliminating the requirement for CSL pipes to pass the O-cell level, and can be fitted during installation of the O-cell assembly and instrumentation of the reinforcing cage.

