

Thermal Integrity Profiler for concrete foundations

Pile Dynamics (PDI) - Foundation & Geotechnical Engineering (FGE) partnership has developed a new solution for integrity evaluation of concrete foundations, the Thermal Integrity Profiler (TIP). It uses the heat generated by curing cement (hydration energy) to assess the quality of cast-in-place concrete foundations such as drilled shafts, bored piles, augered cast-in-place, continuous flight auger piles and drilled displacement piles. Because temperatures within the concrete foundation are dependent on its diameter and distance to the centre of the shaft, TIP measurements may be used to estimate the actual shape of the shaft including the previously difficult to determine thickness of concrete cover.

The TIP is based on research conducted at the University of South Florida in the US and was originally implemented by FGE. It is attractive in that it assesses the concrete quality of the entire cross-section and along the entire length of the foundation. Another major advantage of the TIP is its early testing time; test results are available as early as 12 hours after concrete is poured, allowing construction to continue.

The TIP is available in two types of thermal data acquisition systems - either with an infrared probe that is inserted in Crosshole Sonic Logging-type access tubes, or with thermal wires that are attached to the reinforcement cage prior to concreting. Either way, data is collected by Thermal Acquisition Ports, transferred to the TIP, and downloaded to a computer for further analysis and result presentation by the Thermal Analysis Reporter software.

In addition to the TIP, Pile Dynamics produces several other quality assurance and quality control products for the deep foundations industry. Its products are recognised throughout the world as the ultimate solutions for testing and monitoring of deep foundations. The company is based in Cleveland, Ohio, USA and has commercial representatives worldwide. ■

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