



D18/Soil and Rock

Strong Foundations

Temperature can be a key indicator of the integrity of concrete deep foundations. Now, a routinely used temperature assessment method has been developed as a new ASTM standard.

According to ASTM member Garland Likins, D7949, Test Methods for Thermal Integrity Profiling of Concrete Deep Foundations, was developed to ensure that the correct procedures will be used.

“Evaluating the full cross-section of drilled shafts is important,” says Likins, senior partner, Pile Dynamics Inc.

“Lack of quality concrete either inside or outside the reinforcing cage can lead potentially to foundation failures, particularly when a defect is located relatively near the top of the shaft and when lateral forces are present.”

The test described in D7949 can be used to find major defects anywhere in a cross section of concrete. Because this test is performed sooner than any other nondestructive test — typically within 12-14 hours of casting — the

construction process can be accelerated.

Likins notes that the scientific basis for D7949 is that concrete emits heat during the curing stage. If temperature measurements during early curing show a relative temperature reduction in a section of the shaft, it could indicate a reduction in cement content due to a cross-section reduction or poor quality concrete. Either possibility compromises the strength of the shaft.

“Assuring the integrity of drilled deep foundations during the construction process avoids subsequent remediation of failing foundations,” says Likins.

Engineers are likely to reference the standard in project specifications. In addition, Likins says that departments of transportation will include D7949 in plans when drilled shafts are specified. Finally, contractors may find that D7949 is an attractive and timesaving alternative to other nondestructive testing methods for construction inspection.

D7949 was developed by Subcommittee D18.11 on Deep Foundations, part of ASTM Committee D18 on Soil and Rock. All interested parties are welcome to participate in the ongoing standards development activities of D18.11.

To purchase ASTM standards, visit www.astm.org and search by the standard designation, or contact ASTM Sales (tel +1.877.909.ASTM; sales@astm.org).

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UPCOMING MEETING

June 14-17
June Committee Week
Anaheim, Calif.

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