

New TEMP System Helps Monitor Foundations Considered Mass Concrete



A new system for measuring, analyzing and reporting temperatures generated by mass concrete pours has reached the market. The TEMP (Thermal Evaluation of Mass Pours) system makes it simple and cost efficient to meet requirements of thermal

control plans and monitor concrete maturity.

Concrete typically generates heat during hydration (curing), but when the volume of cement in a concrete placement is substantial, undesirable temperature effects may result. These placements are classified as “mass concrete,” and require “thermal control plans” that include measuring temperatures at various locations inside the concrete pour during curing. Measured temperatures must remain within allowable limits. In some instances, drilled shafts and cast-in-place pile caps exhibit characteristics of mass concrete.

TEMP measures concrete temperatures during curing in various locations of the pour using Pile Dynamics’ patented Thermal Wire® cables, which feature custom-spaced digital temperature sensors. The cables are cast into the concrete, often tied to the reinforcement. The TEMP system is unique in making it possible to have multiple measuring points in a single Thermal Wire cable, al-

lowing the design of each monitoring project with as few or as many temperature sensors per cable as required to minimize cost.

A single external TEMP data logger collects and stores temperature measurements of all sensors of the Thermal Wire cable. There are no batteries in the sensors themselves, only in the external TEMP data logger. That battery lasts 28 days, is rechargeable and is easily replaceable when low, making it possible to monitor and store temperature data indefinitely. Data is transferred from the data loggers to the TEMP main unit for quick observation whenever desired – the main unit has a high resolution screen visible in all lighting conditions.

Analysis and reporting is performed with the TEMP-S software, which makes it fast and intuitive to generate a customized presentation-quality report. It displays measured temperatures versus time in graphical and tabular forms, maximum and minimum temperatures, and the maximum temperature differentials (ΔT), along with allowable limits entered by the user.

TEMP-S calculates concrete maturity based on measured temperatures, and helps the user estimate concrete strength based on a user-determined strength-maturity relationship. The TEMP system allows users to comply with maturity monitoring requirements of ASTM C1074 – 11 Standard Practice for Estimating Concrete Strength by the Maturity Method.

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