

Method of Constructing Voided Drilled Shafts

Researchers at the University of South Florida have developed a cost effective method of constructing drilled shafts that are capable of maintaining heat at safe levels.

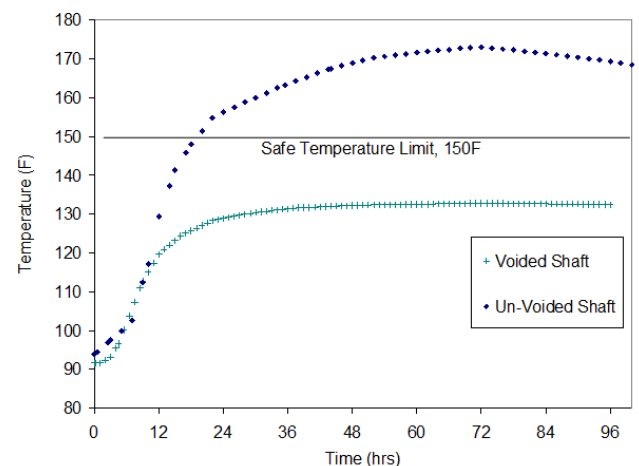
Currently, large concrete structures such as drill shaft foundations are cast-in-place. During construction, large-diameter cast-in-place concrete structures can generate very high temperatures when the concrete is curing. Unfortunately, the concrete tends to degrade and does not cure properly when it exceeds a safe temperature limit. The temperature caused by the heat of hydration is not easily maintained or controlled. This requires cooling systems to be integrated. These large concrete structures are built with increased cross-sectional areas to maintain strength, and therefore, also require large volumes of concrete to create them. There is a need for cost effective, cast-in-place concrete structures that maintain the heat at safe levels.

USF inventors have created a method of constructing a drilled shaft with a voided center. Implementing this method serves as a temperature control system as the concrete cures, requiring no additional cooling systems or piping. This method also decreases the cross-sectional area, which decreases the required volume of concrete and therefore the cost. This new method has multiple industrial applications and the potential to improve any large diameter deep concrete structures and foundations.

ADVANTAGES:

- Center core of shaft is voided
- Minimized peak temperature of concrete during curing
- Cost effective
- No expensive cooling systems
- Reduced volume of concrete required

Cost Efficient, Internal Cooling System for Cast-In-Place Concrete Structures



A Comparison of Temperature Increase Over Time for Non-Voided and Voided Shafts

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