DISCUSSION

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The effects of placement conditions on the quality of concrete in large-diameter bored piles

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COMMENT

I was very interested to read this useful contribution to the practical aspects of concreting on site, specifically for bored piles. The information given is very helpful in assessing the influence of ingressing water into such pile holes during concreting operations, and I would like to commend the authors on their contribution.

It reminds me of a case I dealt with about 30 years ago, on exactly the same problem. Unfortunately we did not have this paper to refer to then, because it could have saved quite some difficulties. The case involved a series of deep (20 m) bored piles for a very large cement silo. I was privileged to work with the late Dr Ross Parry-Davies on the problem–I as a young and somewhat green engineer and academic, he as an already well-experienced and knowledgeable geotechnical engineer of substantial reputation.

There had been a lot of water ingress into some of the pile holes before and during concreting. While the piling contractor had taken all the necessary precautions, there was concern that the water may have compromised the integrity of the piles. Consequently, cores were taken through the full depth of some piles. The appearance of the cores was remarkably similar to the photographs given in the cited paper. It was obvious that water had created lenses in the concrete at certain points.

The client and his engineer were of the opinion that the contractor had been negligent in the piling operation. It was our contention that all reasonable precautions had been taken, but that in spite of these, the ingressing water had caused problems in the piles – problems that would have been very difficult to avoid. I recall having to defend my theory of how the ingressing water had affected the piles before a very critical and somewhat caustic senior engineer, which was certainly intimidating! After considerable argument, the client and the engineer eventually accepted our explanation, and it was decided to remedy the piles by grouting of the voids. I am happy to report that the cement silo has operated quite successfully for the last 30 years, and continues to do so!

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