DISCUSSION

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Vol 60 (1) 2018, Pages 44–51, Paper 1410: Comparative analysis of methods of pile-bearing capacity evaluation using CPT logs from tropical soils

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COMMENT

The authors really did a great job and presented a very interesting article. However, we would like to draw attention to a few inaccuracies.

The authors analysed the obtained results and observed that the results from the pile capacity, according to Schmertmann's method, received exceptionally high values. Since CPT test charts, soil descriptions, types of piles and pile diameters are not included in the article, it is difficult to say why the authors obtained such results. However, we would like to point out that in the article Equation 1, q_{c1} and q_{c2} should not be "cone tip resistance", but as Nottingham (1975) stated, quoted by you, should be smaller:

"If the mechanical penetrometer is used in clays, the computed q_c value should be multiplied by 0.60 to account for the possible increase in q_c resulting from friction on the tip mantle. If the design is to be based on yield capacity criteria, multiply the computed ultimate tip resistance by 0.73."

Also, after the analysis of graphics it was noticed that the pile capacities, according to De Ruiter, are equal to 0 (in Figures 1–4). This should not be the case even with very weak soil.

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REFERENCE

Nottingham, L C 1975. *Use of quasi-static friction cone penetrometer data to predict load capacity of displacement piles.* PhD thesis. Gainesville, FL: University of Florida, Department of Civil Engineering, p 553.

RESPONSE FROM AUTHORS

We appreciate the remarks from D Sližytė and R Mackevičius, but would like to state the following:

1. Equation 1, which is presented as $q_t = \frac{q_{c1} + q_{c2}}{2}$, and which can be seen in Nottingham (1975) and is further illustrated by Schmertmann (1978), is correct.
2. Schmertmann (1978) in his illustration stated that "q_{c1} = average q_c values over a distance of xB below the pile tip (path a-b-c). Sum q_c values in both the downward (path a-b) and upward (path b-c) directions. Use actual q_c values along path a-b and the minimum path rule along path b-c. Compute q_{c1} for x-values from 0.7 to 3.75 and use the minimum q_{c1} value obtained."
3. In respect of q_{c2} (which is obtained as the average q_c over a distance 8D above the pile tip) the following: Although not stated in the body of work, the authors agree with the observations of D Sližytė and R Mackevičius that this value, when sought for in clay, should be multiplied by 0.6 to account for the possible increase in q_c values resulting from friction on the tip mantle, and

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this the authors did. The authors only did not state this categorically in the work, because we assume it is common knowledge, as it is also presented in many other standard texts.

4. A careful observation of Figures 1 to 4 will show that the zero pile capacity values are not those of De Ruiter, but on the contrary they are pile capacities attributed to the Tumay and Fakhroo method. They were assigned zero values by the authors, because Figures 1 to 4 show the pile capacities obtained in sands (refer to page 51, Figure 10 of the article), and the Tumay and Fakhroo methods were generated while tests were carried out on clays (Tumay & Fakhroo 1982).

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Nottingham, L C 1975. *Use of quasi-static friction cone penetrometer data to predict load capacity of displacement piles.* PhD thesis. Gainesville, FL: University of Florida, Department of Civil Engineering, p 553.

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Tumay, M T & Fakhroo, M 1982. *Friction pile capacity prediction in cohesive soils using electric quasi-static penetration tests*. Interim Research Report No. 1. Baton Rouge, LA: Louisiana Department of Transportation and Development, Research and Development Section.