DISCUSSION

Julio Augusto De Alencar, Jr.[1] (written discussion)—The ASTM International Symposium on Laboratory/Field Vane Shear Strength Testing presented studies on various factors that influence the execution and interpretation of the vane test as well as its advantages and limitations. It has shown there is still a lot of work to be done in order to properly understand the shearing mechanism generated during the test and adequately quantify, though on an empirical basis, the influence of different factors, like disturbance caused by insertion, rate of shearing, plasticity, sensitivity of the material being tested, and progressive failure.

Within this context, more emphasis should be given to influence of the structure of the material in results obtained from the test. Theoretical analysis presented by De Alencar, Chan, and Morgenstern as well as field data presented by other authors, in which it is observed that materials of higher sensitivity yield lower maximum measured torque, suggest, in our opinion, that progressive failure may have significant influence on the value of maximum torque measured, lowering its value. Therefore, some skepticism should be exercised with respect to considering the strength calculated for these materials as "peak strength."

Several correlations have been presented involving strength and index properties, especially the plasticity index. To obtain these indexes, it is necessary to completely destroy the structure of the material. It is well known today that the structure of the material exerts an extremely important influence on its strength (drained or undrained). Therefore it is not meaningful to compare S_u times index properties correlations involving materials of completely different structures. It is very important, then, whenever this kind of correlation is presented that some effort is spent on describing the structure of the material.

R. J. Chandler (author's closure)—There seems to be agreement that the field vane test is likely to underestimate the undrained shear strength of high sensitivity, low plasticity clays. The reasons for this remain uncertain. It will certainly be helpful to have good descriptions of the clay structure, where this can be done. However, for correlative purposes, at present the most satisfactory method is to relate natural water content and index properties, expressing the result as a liquidity index. Unfortunately, clay structure descriptions are not capable of quantification in any more convenient manner.

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