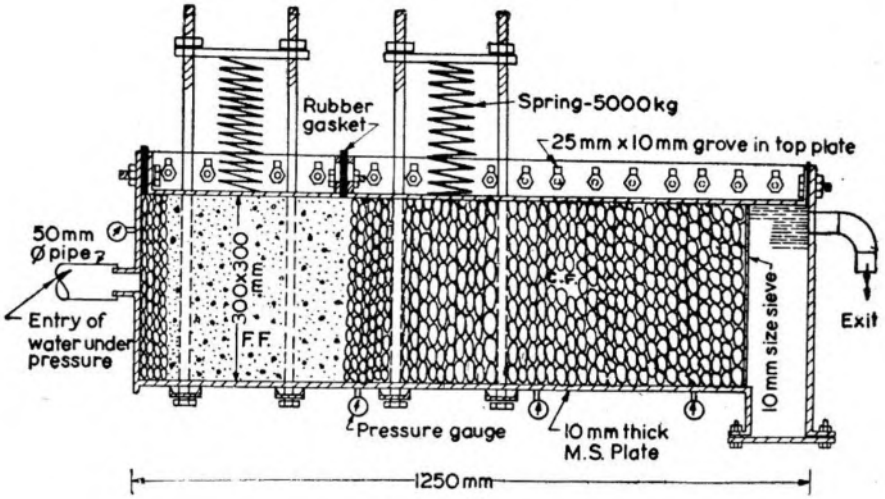

FIGURE 2.

results and conclusions available from this test set up shall be reported separately.

Regarding exhibits enclosed by discussor following mention is made :—

(1) Table III enclosed by discussor is almost a reproduction of Table IV of the paper.

(2) Figure 2 enclosed by discussor has been incorporated in Figure 1 of the paper.

* * *

Buckling Resistance of Piles in Layered Clays*

by

Z.H. Mazindrani and V.V.R.N. Sastri

I.D. DESAI** AND A.B. NAIK**

The authors are to be commended for the work they have reported. However, the theoretical work presented in this paper would have appreciable practical utility, if it would have been supported by the experimental work.

For large values of K, such as $K=148$ as adopted by the authors in the numerical example ; the buckling of pile in the zone of soft clay is much more than that in the zone of stiff clay. In such a case ; the friction at the junction of the layers should have been accounted for.

The value of $K=148$ as adopted by the authors seems to be hypothetical, as the ratio of modulus of subgrade reaction for the best base to

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very poor base reported by Timoshenko and Krieger is 8. However, for a pile embedded in a layered clay with large value of K, such as 148, the buckling load can be estimated with a reasonable accuracy by assuming one end hinged, other end portion partially fixed in an elastic stiff clay and the length within the soft clay to be laterally supported by subgrade reaction.

Keeping these in view, it is felt that the Equation (11) developed by the authors would have been appreciated more ; if its applicability for various values of α, K and β would have been studied in details.

Reference

TIMOSHENKO, S.P. and KRIEGER, S.W. : "Theory of Plates and Shells". 2nd Edition, McGraw Hill Book Co., Inc., International Students Edition.

AUTHORS' REPLY

The authors thank Sarvashri I.D. Desai and A.B. Naik for their keen interest in the paper. The authors very much agree with the view expressed that experimental work supporting the theoretical deductions would be of appreciable practical utility.

The friction between the two layers has been neglected as also the adhesion between the pile surface and the surrounding clay in order to simplify the mathematical analysis ; and it may be added that this leads to a conservative design.

The writers are requested to refer to the paper by Terzaghi (1955) wherein sufficient data is available to conclude that values of K as large as 200 are possible.

The analysis for the standard case of a pile with both ends hinged and surrounded by a two layered system of clay is presented in the paper. The writers' suggestion that the portion of the pile embedded in the stiff clay may be considered as partially fixed, leads to further problems such as the extent of fixity to be considered and the portion of the pile length embedded in stiff clay taking part in the buckling phenomena ; and further the view of the writers that embedment in soft clay only need be considered as laterally supported while considering the portion in stiff clay to be partially fixed does not seem to be justified.

However, the authors agree that extensive experimentation together with theoretical analysis is required to evaluate the crippling loads for various end conditions resulting from the stiffness of the soil at bottom and embedment in concrete pile cap at top.

Reference

TERZAGHI, K. (1955) : "Evaluation of Coefficients of Subgrade Reaction". Geotechnique, Vol. 5, pp. 297-326.

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