

*W. J. Eden*¹

Panel Discussion on Sampling of Sensitive Clay

Four of the twelve papers presented to the symposium deal with the sampling of sensitive clay. The clays varied from nearly normally consolidated to overconsolidated. Bozozuk² reports on samples taken from a site where the clay was nearly normally consolidated. The results in his paper indicate that the differences in test results obtained from various types of sampler are not very great. The variance of test results from a particular level was no more than 15 percent. Milovic³ reports on two sites (Nicolet, St. Simon) which are slightly overconsolidated, less than 1 ton/ft². At both these sites, open-drive Shelby tubes, NGI fixed-piston and block samples were taken. At Nicolet, the results from the piston sampler, although not as good as the block samples, could be considered to be acceptable. Sampling problems seemed more severe with the St. Simon clay. Both the Nicolet and St. Simon clays are similar in strength characteristics. The St. Simon clay had a higher liquidity index, which may indicate the degree of bonding or cementation in the clay. If this is the case, then the more bonded clay was more difficult to sample. The effect of bonding was well illustrated by LaRochelle and Lefebvre,⁴ and indicates that cemented clays have very little tolerance for lateral strain. The final paper⁵ shows that strength results from tube samples from overconsolidated brittle clays are definitely suspect. Judging from the four papers, then, the sampling problem becomes more severe as the clays progress from the normally consolidated state to overconsolidated cemented clays.

With reference to the proposed German Standard,⁶ it appears that

¹ Research officer, Division of Building Research, National Research Council of Canada, Ottawa, Ont., Canada.

² See p. 121.

³ See p. 164.

⁴ See p. 143.

⁵ See p. 132.

⁶ Idel, K. H. and Stump, S., "Introductory Comments on German Standard DIN 4021—Foundation and Groundwater Exploration, Bores, Test Excavations, Soil Sampling Principles," revised version, Feb. 1969.

present-day techniques and piston samplers will yield all but Class 1 samples in sensitive clays. In normally consolidated clays, the present equipment may be able to achieve the Class 1 samples. For overconsolidated clays, Class 1 samples may be achieved only by taking block samples from test pits.

Considering the future development of samplers, two papers in the symposium offer some suggestions. Rowe⁷ has shown that good quality samples may be obtained by using 10-in.-diameter tubes. LaRochelle and Lefebvre indicate that lateral strain should be kept to a minimum. Hence, it is suggested that large diameter samplers with a minimum clearance ratio and area ratios of 5 percent or less may provide better results than achieved with present samplers.

⁷ See p. 77.