

SYMPOSIUM ON SOILS FOR ENGINEERING PURPOSES

INTRODUCTION:

SOIL MECHANICS PROGRESS IN 1959

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The papers presented in this book include a wide variety of studies into the details of the testing of soils for engineering purposes. It is only by thoughtful consideration of such studies that progress is made in the successful application of laboratory testing to engineering problems. Each of the papers here presented has something to contribute, whether it be a detail that will result in more accurate and realistic testing, or a broad concept of the correlation of laboratory testing with field results.

An example of the former, picked at random from several equally interesting papers, is "The Effect of Particle Shape and Texture on the Strength of Non-Cohesive Aggregates," by H. C. Morris of the University of Washington. It has long been recognized that particle shape has an effect on the shearing resistance of sand and gravel, but not much attention has been given to surface texture. Careful experimentation by Mr. Morris has shown that both are important, and that there is a critical combination of characteristics which results in the greatest shearing resistance. Such detailed research results as this are the building blocks of which our soil mechanics and foundation engineering structure is made.

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Examples of the broad concept of correlating testing with engineering problems are present in the discussions by Professors Burmister, Housel, Schiffman, and others. For instance, Professor Burmister's discussion of the "Strain-Rate Behavior of Plastic Clay" brings out the fact that tests on clay must be carefully devised to simulate field conditions, if they are to be realistic and not lead to incorrect solutions of engineering problems. He points out that clays are strongly strain-rate-dependent, and that it is necessary to distinguish between two fundamental stress-strain phenomena;—consolidation, where volume change predominates, and triaxial loadings, where shearing deformations are most important. His discussion of the types of tests to be performed to meet the various problems is broad in its concept, and thought provoking for all who deal with soil engineering.

It is confidently believed that the publication of such bulletins as this one is a distinct service to soil engineers, technicians and all who read it. It is not only a compilation of new data and new thoughts, but also a stimulant to further research and to the consequent growth and understanding of the behavior of soils.