

## SYMPOSIUM ON THE COMPACTION OF SOILS

## INTRODUCTION

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The construction of structures made of soils is probably as old as man. Indeed, the use of fills to support transportation is older than our descriptive name for the resulting structures—highways. Even by the standards of today, the size of some of these old projects is most impressive. An example of this is the sand ramps that were constructed probably to raise the massive limestone blocks forming the nearly 5000-year old and 500-ft high Great Pyramid in Egypt.

It is comparatively recently, however, that constructed soils have been confidently used to support more conventional structures, ranging in weight from massive embankments and heavy buildings through stub bridge abutments down to light residential housing. This has become possible through our developing understanding of the processes of compaction and of the resulting properties of the compacted soil. This development started in California in about 1930 and has accompanied the parallel development of more efficient construction equipment to process soils.

Since the early California work the growth of the literature on compacted soils has proceeded at a rate such that it is increasingly difficult to remain abreast. This work, which at first was largely directed at preventing subsidence, has expanded with the size and usage

of compacted soil structures. Today concepts of excess pore pressure, soil structure, short and long term stability, the effects of climate, etc., are most important. It was perhaps inevitable that an increased understanding of the properties of compacted soils could give rise to the development of misconceptions and in recognition of all these developments, the Executive Committee of ASTM Committee D-18 on Soils and Rock suggested the presentation of a symposium at the 1964 Annual Meeting, a symposium in which some of the applications and concepts of soil testing in the design and construction of compacted soils might be summarized and discussed.

The first part of this resulting symposium consists of four papers describing recent research in compacted soils. Two papers present the results of research on laboratory maximum density tests, one vibrational and one dynamic, two other papers are concerned with the effects of environment. The second part of the symposium consists of a panel discussion aimed at a resume of current concepts and practices and at stimulating new ones.

It is hoped that the efforts of the panel members and authors, who gave generously of their time and energy in preparing and presenting these discussions and papers, will have some constructive influence on future work in the broad area of compacted soil structures.

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