FUNDAMENTALS OF

SOIL MECHANICS

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PREFACE

Soil mechanics is a pioneer science which has grown rapidly during the last two decades. Its introduction into this country —under this name, at least—is generally accredited to Dr. Karl Terzaghi and is considered to have occurred in 1925. With each year since that date soil mechanics has become more widely known, the number of soil mechanics laboratories has increased, more colleges have offered courses in this new subject, and practical applications of this science have become more numerous.

The amount of existing soil mechanics literature has increased rapidly but textbooks and handbooks have been slow to appear, probably because of the extensive scope of the subject. Books of a number of types on this subject are needed, and it is of considerable importance to distinguish between the various types, which include the handbook for the practicing engineer, the manual for the laboratory technician, the textbooks for college courses of undergraduate level and graduate level, and the advanced textbook for the specialist. It is probable that no book can serve more than one or two of these fields to best advantage. This book is written as a textbook for use in graduate courses, but it is presented in such form that by the omission of certain portions it can be used in undergraduate courses. Practicing engineers and specialists in soil engineering may find the book of interest and value but, primarily, it is written for the student. The basic aim of the book is the presentation of fundamentals rather than the furnishing of final answers to practical problems; nevertheless, the book aims to develop the reader's appreciation for the practical significance of the various subjects considered.

I wish to acknowledge and to express appreciation for the privilege of including in this book material that is the work of three of my predecessors on the Soil Mechanics staff of the Massachusetts Institute of Technology. These three engineers, each

of whom has played an important part in the growth of soil mechanics, are Dr. Karl Terzaghi, Dr. Glennon Gilboy, and Dr. Arthur Casagrande. Dr. Terzaghi put out a preliminary set of notes for the use of students in 1926 or thereabouts. Dr. Gilboy prepared a set of notes in 1930 that covered approximately one-third of the material of his graduate soil mechanics courses and bore the title *Notes on Soil Mechanics*. I revised and completed these *Notes on Soil Mechanics* in 1938 and 1939. To a degree this book is the outgrowth of these sets of lecture notes.

An attempt is made to include acknowledgment to the originators of material that is presented in this book. However, the development of many of the subjects treated is the result of the efforts of many persons, and in many cases it is not possible to know just how much credit is due to the various participants or even to be certain of the complete list of contributors. For all omissions of credit, where due, regrets are expressed. I wish to acknowledge helpful suggestions and to express my appreciation to Professor Dean Peabody, Jr., and Mr. T. W. Lambe, who read the entire manuscript, to Dr. M. J. Hvorslev, who reviewed Chapter 5, to a number of assistants and students, who have read parts of the manuscript, and especially to Dr. Glennon Gilboy, for his inspiring instruction and supervision during the period when I was his assistant, and to Dr. J. B. Wilbur and Professor C. B. Breed, Head and former Head, respectively, of the Department of Civil and Sanitary Engineering at the Massachusetts Institute of Technology, for suggestions and encouragement.

D. W. T.

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