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FOUNDATION ENGINEERING

Edited by

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FOUNDATION ENGINEERING

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PREFACE

Soil has been used as a foundation and construction material since the earliest days of recorded history. By the time the scientific method became generally recognized as a fruitful approach to the solution of engineering problems, monumental buildings, bridges, dams, canals, and roads had not only been built but some had served their useful purpose for many centuries. It was inevitable, therefore, that earthwork and foundation engineering developed primarily as an art steeped in tradition and empirical practices based on earlier successful accomplishments.

During the past forty years tremendous advances have been made in our knowledge of the physical properties of soils, and in our understanding of the applicability of theories of earth action. Significant changes have occurred in design and construction practices, and while experience remains as a most important requisite to success, rational design methods have largely supplanted rule-of-thumb techniques. Accordingly, the primary purpose of this book is to present a comprehensive treatment of the current status of the science and art of foundation engineering. Emphasis is placed on foundation *analysis* and *design*; full advantage is taken of theoretical analyses whenever they contribute to an understanding of the problem, or when they assist in obtaining safe and economical designs.

The field of foundation engineering is too broad to be treated adequately in a single volume, hence important topics such as embankments, cut slopes, earth dams, levees, foundations for masonry dams, tunnels, and highway and airport pavements have been omitted. Owing to circumstances beyond the control of the editor and publisher, it was not possible to include a chapter on subsoil exploration as originally planned. These topics will be considered in a companion volume. To maintain continuity, the scope of the introductory chapters was developed to serve both volumes.

An attempt has been made to combine the knowledge and experience of recognized authorities to develop a single text with sufficient continuity

and scope to be useful to students and practicing engineers alike. Nevertheless, both the style and the philosophy of the individual manuscripts have been largely retained, and each author accepts primary responsibility for his particular chapter. The cooperation and advice of the contributing authors, and of many others too numerous to mention, are gratefully acknowledged.

G. A. Leonards

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