

1. Record Nr.	UNINA9910807857503321
Autore	Wesley Laurence D
Titolo	Geotechnical engineering in residual soils / / Laurence D. Wesley
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, c2010
ISBN	1-282-77304-6 0-470-94311-4 0-470-64436-2 9786612773044 0-470-64438-9
Edizione	[1st ed.]
Descrizione fisica	xv, 249 p. : ill
Disciplina	624.1/51
Soggetti	Residual materials (Geology) Engineering geology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Geotechnical Engineering in Residual Soils -- CONTENTS -- PREFACE AND ACKNOWLEDGMENTS -- CHAPTER 1: FUNDAMENTAL ASPECTS OF RESIDUAL SOIL BEHAVIOR -- 1.1 INTRODUCTION -- 1.2 FORMATION PROCESSES AND BASIC DIFFERENCE BETWEEN RESIDUAL AND SEDIMENTARY SOILS -- 1.3 STRUCTURE OF RESIDUAL SOILS -- 1.4 SPECIAL CLAY MINERALS -- 1.5 THE INFLUENCE OF TOPOGRAPHY -- 1.6 GEOTECHNICAL ANALYSIS, DESIGN, AND THE ROLE OF OBSERVATION AND JUDGMENT -- 1.7 SUMMARY OF BASIC DIFFERENCES BETWEEN RESIDUAL AND SEDIMENTARY SOILS -- REFERENCES -- CHAPTER 2: EVALUATION, CHARACTERIZATION, AND CLASSIFICATION OF RESIDUAL SOILS -- 2.1 INTRODUCTION -- 2.2 PARENT ROCK AND THE SOIL PROFILE -- 2.3 INFLUENCE OF PARENT ROCK ON GEOTECHNICAL PROPERTIES -- 2.4 THE ROLE OF OBSERVATION -- 2.5 STANDARD INDEX TESTS -- 2.6 CLASSIFICATION SYSTEMS FOR RESIDUAL SOILS -- REFERENCES -- CHAPTER 3: PORE PRESSURES AND SEEPAGE CONDITIONS ABOVE AND BELOW THE WATER TABLE -- 3.1 INTRODUCTION -- 3.2 SITUATION AT LEVEL SITES -- 3.3 HILL SLOPES, SEEPAGE, AND PORE PRESSURES -- 3.4 PERMEABILITY OF RESIDUAL SOILS -- 3.5 SIGNIFICANCE OF THE WATER TABLE (OR PHREATIC

SURFACE) -- 3.6 IMPLICATIONS OF THE GROUNDWATER AND SEEPAGE STATE ABOVE THE WATER TABLE FOR PRACTICAL SITUATIONS -- REFERENCES -- CHAPTER 4: CONSOLIDATION AND SETTLEMENT -- 4.1 INTRODUCTION -- 4.2 INTERPRETATION OF STANDARD OEDOMETER TEST RESULTS AND THE "OMNIPOTENCE OF TRADITION" -- 4.3 BEHAVIOR OF RESIDUAL SOILS -- 4.4 CONSOLIDATION BEHAVIOR AFTER REMOLDING -- 4.5 VALUES OF STIFFNESS PARAMETERS FOR RESIDUAL SOILS -- 4.6 TIME RATE AND ESTIMATION OF THE COEFFICIENT OF CONSOLIDATION -- 4.7 RATE OF CONSOLIDATION FOR SURFACE FOUNDATIONS ON DEEP SOIL LAYERS -- 4.8 EXAMPLES OF SETTLEMENT ESTIMATES -- 4.9 ACCURACY OF SETTLEMENT ESTIMATES BASED ON OEDOMETER TESTS -- 4.10 ALLOWABLE DIFFERENTIAL SETTLEMENT FOR SURFACE FOUNDATIONS ON RESIDUAL SOIL. REFERENCES -- CHAPTER 5: SHEAR STRENGTH OF RESIDUAL SOILS -- 5.1 INTRODUCTION -- 5.2 UNDRAINED SHEAR STRENGTH -- 5.3 EFFECTIVE STRENGTH PROPERTIES -- REFERENCES -- CHAPTER 6: SITE INVESTIGATIONS AND THE MEASUREMENT OF SOIL PROPERTIES -- 6.1 INTRODUCTION -- 6.2 APPROACHES TO SITE INVESTIGATIONS -- 6.3 ORGANIZATIONAL AND ADMINISTRATIVE ARRANGEMENTS -- 6.4 PLANNING SITE INVESTIGATIONS -- 6.5 FIELD WORK -- 6.6 BLOCK SAMPLING -- 6.7 IN SITU SHEAR TESTS -- 6.8 LABORATORY TESTING -- 6.9 CORRELATIONS WITH OTHER PROPERTIES AND PARAMETERS -- REFERENCES -- CHAPTER 7: BEARING CAPACITY AND EARTH PRESSURES -- 7.1 INTRODUCTION -- 7.2 BEARING CAPACITY AND FOUNDATION DESIGN -- 7.3 EARTH PRESSURE AND RETAINING WALL DESIGN -- REFERENCES -- CHAPTER 8: SLOPE STABILITY AND SLOPE ENGINEERING -- 8.1 INTRODUCTION -- 8.2 FAILURE MODES -- 8.3 THE PLACE OF ANALYTICAL AND NONANALYTICAL METHODS FOR ASSESSING THE STABILITY OF NATURAL SLOPES -- 8.4 APPLICATION AND LIMITATIONS OF ANALYTICAL METHODS -- 8.5 UNCERTAINTIES IN MATERIAL PROPERTIES -- 8.6 UNCERTAINTIES IN THE SEEPAGE AND PORE PRESSURE STATE -- 8.7 THE WORST-CASE ASSUMPTION REGARDING THE WATER TABLE -- 8.8 TRANSIENT ANALYSIS OF RAINFALL INFLUENCE ON THE STABILITY OF A HOMOGENEOUS CLAY SLOPE -- 8.9 MODELING STABILITY CHANGES RESULTING FROM VARYING RAINFALL INTENSITIES -- 8.10 THE HONG KONG SITUATION -- 8.11 BACK-ANALYSIS METHODS TO DETERMINE SOIL PARAMETERS -- 8.12 SLOPE DESIGN -- REFERENCES -- CHAPTER 9: VOLCANIC SOILS -- 9.1 INTRODUCTION AND GENERAL OBSERVATIONS -- 9.2 ALLOPHANE CLAYS -- 9.3 VOLCANIC ASH CLAYS DERIVED FROM RHYOLITIC PARENT MATERIAL -- 9.4 OTHER UNUSUAL CLAYS OF VOLCANIC ORIGIN -- 9.5 PUMICEOUS MATERIALS -- REFERENCES -- CHAPTER 10: RESIDUAL SOILS NOT DERIVED FROM VOLCANIC MATERIAL -- 10.1 INTRODUCTION -- 10.2 WEATHERED GRANITE (GROUP 1 IN FIGURE 10.1) -- 10.3 WEATHERED SEDIMENTARY ROCKS. 10.4 LATERITES AND TROPICAL RED CLAYS (GROUP 5 IN FIGURE 10.1) -- 10.5 BLACK OR BLACK COTTON CLAYS -- REFERENCES -- CHAPTER 11: COMPACTION OF RESIDUAL SOILS -- 11.1 INTRODUCTION -- 11.2 SOME REFLECTIONS ON COMPACTION BEHAVIOR OF SOILS AND QUALITY CONTROL METHODS -- 11.3 OPTIMUM COMPACTIVE EFFORT AS WELL AS OPTIMUM WATER CONTENT -- 11.4 ALTERNATIVE COMPACTION CONTROL BASED ON UNDRAINED SHEAR STRENGTH AND AIR VOIDS -- 11.5 THE USE OF SHEAR STRENGTH TO OVERCOME DIFFICULTIES IN COMPACTING RESIDUAL SOILS -- 11.6 HARD, PARTIALLY WEATHERED, RESIDUAL SOILS -- REFERENCES -- INDEX.

reference will be the first book focused entirely on the unique engineering properties of residual soil. Given the predominance of residual soils in the under-developed parts of the United States and the Southern Hemisphere, and the increasing rate of new construction in these regions, the understanding of residual soils is expected to increase in importance in the coming years. This book will be written for the practicing geotechnical engineer working to any degree with residual soils. It will describe the unique properties of residual soil and provide innovative design techniques for building on it safely. The author will draw on his 30 years of practical experience as a practicing geotechnical engineer, imbuing the work with real world examples and practice problems influenced by his work in South America and Southeast Asia"--

---