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Autore	Murray E. J (Edward John), <1949->
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5.4 Variables of state; 5.5 Extensive and intensive variables; 5.6 The laws of thermodynamics; 5.7 Thermodynamic potentials; 5.8 Thermodynamic potentials in practice; 5.9 Conjugate thermodynamic pairings; 5.10 Influence of a gravitational field; 5.11 Concluding remarks
6 Equilibrium Analysis and Assumptions in Triaxial Testing6.1 Introduction; 6.2 The minimum principles for the potentials; 6.3 Isotropic loading conditions; 6.4 Anisotropic loading conditions; 6.5 Work input and the thermodynamic potential; 6.6 The thermodynamic potential and axis translation; 6.7 The thermodynamic potential and an aggregated soil structure; 6.8 Conclusions; 7 Enthalpy and Equilibrium Stress Conditions in Unsaturated Soils; 7.1 Introduction; 7.2 Role of enthalpy; 7.3 Enthalpy and Terzaghi's effective stress for saturated soils; 7.4 Enthalpy of unsaturated soils
7.5 The significance of 7.6 Stress state in unsaturated soils; 7.7 Alternative equilibrium analysis; 7.8 Graphical representation of stress state in unsaturated soils; 7.9 Stress state variables and conjugate volumetric variables; 7.10 Hysteresis, collapse and discontinuities in soil behaviour; 7.11 Conclusions; 8 Shear Strength and Compression Characteristics of Unsaturated Soils; 8.1 Introduction; 8.2 Shear strength and critical state characteristics of unsaturated soils; 8.3 Equivalent strength parameters; 8.4 Compression and critical state characteristics of unsaturated kaolin
8.5 Modelling of unsaturated kaolin

Sommario/riassunto

An understanding of the mechanical properties of unsaturated soils is crucial for geotechnical engineers worldwide, as well as to those concerned with the interaction of structures with the ground. This book deals principally with fine-grained clays and silts, or soils containing coarser sand and gravel particles but with a significant percentage of fines. The study of unsaturated soil is a practical subject, linking fundamental science to nature. Soils in general are inherently variable and their behaviour is not easy to analyse or predict, and unsaturated soils raise the complexity to a hi