INTERNATIONAL CONFERENCE ON CONSTITUTIVE LAWS FOR ENGINEERING MATERIALS: THEORY AND APPLICATION

University of Arizona, Tucson, Arizona, U.S.A., 10–14 January 1983

The importance for constitutive laws of engineering materials for reliable solutions from analytical and computational procedures has been recognized by the researcher and the practitioner. This growing recognition has resulted in significant recent efforts towards theoretical and experimental research, and implementation of the laws in the solution procedures. Constitutive laws already available in the literature as well as some new concepts have been investigated, and in some cases, laws from various fields such as continuum and plasticity theories are studied to seek common grounds.

The objective of this conference is to provide a forum for discussion, review and identification of the future needs for this important subject, for those engaged in theoretical developments and implementation. Specific aims of the meeting are:

(1) Consideration of major constitutive laws for a wide range of engineering materials and relevant to stress-deformation analysis. Particularly those laws possessing potential for successful applications will be emphasized; this can include laws such as those based on elasticity, hypoelasticity, plasticity, viscoelasticity, viscoplasticity, endochronic theories, and rate type models.

(2) Consideration of those aspects that pose difficulties in implementation such as:

  (a) strong nonlinearity and rate dependence,
  (b) instability,
  (c) path and history dependence,
  (d) static and cyclic loading,
  (e) volume change under shear, and
  (f) frictional slip and debonding at interfaces and joints.

(3) Identification of significant constitutive parameters and their determination from appropriate (advanced) laboratory tests.

(4) Verification of constitutive models with respect to laboratory tests, and solution of boundary value problems such as metal structures, R. C. structures, soil-structures interaction, and geologic masses.

(5) Computational schemes to handle special factors such as strong nonlinearity, large plastic strains, and frictional slip and debonding.

(6) Identification of constitutive parameters from measurements of the behavior of engineering problems.

An International Advisory Committee has been constituted with membership: M. L. Baron, Z. Bazant, W. F. Chen, S. C. Cowin, R. O. Davis, C. S. Desai, D. C. Drucker, W. Herrmann, W. D. Liam Finn, R. Fosdik, R. H. Gallagher, T. Kawai, E. Krempl, H. Y. Ko, G. Maier, S. Nemat-Nasser, Z. Mroz, J. T. Oden, K. S. Pister, J. R. Rice, I. M. Smith, W. Wittke and O. C. Zienkiewicz.

The conference will include invited papers dealing with special themes and state-of-the-art, and also papers submitted through this announcement. Interested individuals should send a title and abstract before 30 November 1981. The completed manuscript of selected papers will be due around June 1982. Please send the abstract and title to:

Organizing Committee, Int. Conf. on Constitutive Laws for Engineering Materials, Dept. of Civil Engng. and Engng. Mech., Univ. of Arizona, Tucson, AZ 85721, U.S.A.