CARL J. COSTANTINO
Professor Emeritus
Consulting Engineer
Department of Civil Engineering
The City College of the
City University of New York

EDUCATION

BCE	1956	City College of New York
MSCE	1958	Columbia University, majoring in Soil Mechanics and Foundations with Prof. D.M. Burmister
PhD	1966	Illinois Institute of Technology, majoring in Soil Mechanics and Foundations with Prof. E. Vey

REGISTRATION

Registered Professional Engineer, New York State

EXPERIENCE

1967 - 1996 Department of Civil Engineering, City College of New York
Conducted research on stress wave propagation through soil and rock materials primarily associated with the seismic response of structures, with special emphasis on evaluation of critical facilities. Problems centered on the study of large strain and nonlinear effects on wave propagation, soil-structure interaction, and the influence of pore water on dynamic response. Directed the activities of Doctoral and Masters candidates. Co-Director of CUNY Center for Earthquake Engineering.

1975 - Present Seismic Consultant, Nuclear Regulatory Commission
Perform seismic studies of nuclear reactor facilities for various divisions of NRC at both the design and review stages; assist NRR with evaluation of advanced reactor facilities and audits of existing plant facilities; develop computer programs to assist NRC Staff in their review of facility designs; perform geotechnical site evaluations and liquefaction assessments; testify as expert witness before various licensing hearings.

1985 - Present Seismic Consultant, Department of Energy
Assist various divisions of the DOE in geotechnical and seismic evaluations of critical facilities at both the design and review stage; perform safety evaluations for the underground storage facility (WIPP and Yucca Mountain); perform detailed site and liquefaction evaluations for critical facility sites; assist in the development of DOE safety assessment criteria; evaluate seismic safety of critical facilities at Savannah River Plant, Los Alamos National Laboratory, Rocky Flats, Lawrence Livermore National Laboratory; present results to Defense Nuclear Facilities Safety Board.

1971 - Present Soils Consultant, New York City Transit Authority
Provide consulting services to NYCTA Engineers on all geotechnical issues at both the design and construction stages; assist Staff to generate criteria and incorporate modern foundation developments into projects (jet grouting, soil stabilization via sand/wick drains, grout curtains, secant cutoff walls, etc); direct development of project criteria for seismic design; assist in the

development of Standards for Structural Design, Field Designs, and Soil Exploration; direct the planning and conduct of field exploratory programs; conduct laboratory testing of samples from various projects sites; develop and inspect field monitoring programs; perform studies for dewatering programs, settlement analyses, pile foundation designs, loads on buried structures, soil stabilization projects.

SOCIETY MEMBERSHIP

Member, US National Committee on Tunneling Technology, National Research Council

Technical Societies
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- American Institute of Aeronautics and Astronautics
- Transportation Research Board

Positions Held:
- Chairman, Applied Mechanics Division, Chicago Section, ASME, 1964 -65
- Member, Education Committee, Soil Mechanics Group, Met Section, ASCE, 1980-81
- Reviewer, Applied Mechanics Reviews, ASME
  - Structures Division Journal, ASCE
  - Pressure Vessel and Piping Division, ASME

Honor Societies:
- Sigma Xi, Chi Epsilon, Tau Beta Pi

SOME RECENT PUBLICATIONS ASSOCIATED WITH SOIL-STRUCTURE INTERACTION:

"Guidelines for Seismic Evaluation of Nuclear Facilities", with C. A. Miller, T. Cheng, G. Bagchi, 10th World Conference on Earthquake Engineering, Madrid, Spain, July, 1992

"Site Specific Seismic Hazard Calculations at Deep Soil Sites", with C. A. Miller, E. Heymsfield, Fourth DOE Natural Phenomena Hazards Mitigation Conference, Atlanta, Georgia, October, 1993

"Comparison of Shaker Predictions with Measured Data from the Hualien Quarter Scale Model Experiment", with C. A. Miller, J. McLean, H. Graves, Fourth DOE Natural Phenomena Hazards Mitigation Conference, Atlanta, Georgia, October, 1993

"Seismic Safety of Earth Dams: A Probabilistic Approach", with N. Simos, M. Reich, Proceedings, Second Inter. Conf. on Computational Stochastic Mechanics, Athens, Greece, June, 1994

"Reconnaissance Report for the Hyogo-Ken Earthquake", Proceedings, 7th US-Japan Workshop on the Improvement of Structural Design and Construction Practices, Applied Technology Council and the Japanese Structural Consultants Association, Kobe, Japan, January, 1996

"Hualien Experiment: Model Response to Earthquakes; Nonisotropic Site Properties; Forced Vibration Tests", with C. A. Miller, H. L. Graves, 14th International SMIRT Conference, Lyon, France, August, 1997

"Considerations in the Evaluations of Site Characteristics on Seismic Response", with W. Silva, OECD Workshop on Engineering Characterization of Seismic Input, Committee on the Safety of Nuclear Installations, OECD Nuclear Energy Agency, Brookhaven National Laboratory, Upton, NY November 15, 1999

"Site Response Functions for the Eastern United States as Compared to NEHRP 97 Recommendations", with J. Kimball, OECD Workshop on Engineering Characterization of Seismic Input, Committee on the Safety of Nuclear Installations, OECD Nuclear Energy Agency, Brookhaven National Laboratory, Upton, NY November 15, 1999

“Technical Basis for Revision of Regulatory Guidance on Design Ground Motions: Hazard- and Risk-Consistent Ground Motion Spectra Guidelines”, with R. McGuire, W. Silva, for U.S. Nuclear Regulatory Commission, NUREG/CR-6728, October, 2001

“Methodology to Produce Hazard Consistent Free-field and In-structure Design Response Spectra”, with W. J. Silva, R. K. McGuire, R. M. Kenneally, A. J. Murphy, Proceedings, Organization for Economic Cooperation and Development (OECD-NEA Workshop), Istanbul Turkey, October, 2002

“Assessment of Seismic Analysis Methodologies for Deeply Embedded NPP Structures”, with J. Xu, C. Miller, C. Hofmayer and H. Graves, 18th International SMIRT Conference, Beijing China, August, 2005

“Evaluation of Seismic Induced Wall Pressures for Deeply Embedded NPP Structures”, with J.

Xu, C. Miller, C. Hofmayer and H. Graves, 18th International SMIRT Conference, Beijing China, August, 2005

"Assessment of Seismic Analysis Methodologies for Deeply Embedded NPP Structures", with J. Xu, C. Miller, C. Hofmayer and H. Graves, 18th International SMIRT Conference, Beijing China, August, 2005

"Finite Element Models for Computing Seismic Induced Soil Pressures on Deeply Embedded NPP Structures", with J. Xu, C. Hofmayer, H. Graves, Proceedings, Pressure Vessel and Piping Division Conference, Vancouver BC, July 2006

"Structural Mechanics Software Development for the Nuclear Renaissance", 19th International SMIRT Conference, Toronto, Canada, August, 2007

"Overview on BNL Assessment of Seismic Analysis Methods for Deeply Embedded NPP Structures", with J. Xu, C. Hofmayer, H. Graves, 19th International SMIRT Conference, Toronto, Canada, August, 2007