JONATHAN D. BRAY, Ph.D., P.E., NAE

Faculty Chair in Earthquake Engineering Excellence
Distinguished Professor of Civil & Environmental Engineering
University of California, Berkeley

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EDUCATION

UNIVERSITY OF CALIFORNIA, Berkeley, California
Ph.D. in Geotechnical Engineering, 1990

STANFORD UNIVERSITY, Palo Alto, California
M.S. in Structural Engineering, 1981

UNITED STATES MILITARY ACADEMY, West Point, New York
B.S., 1980

HONORS

National Academy of Engineering, elected in 2015

25th Burmister Lecture, Columbia University, NY, 2025
Ardaman-Wissa Lecture, University of Florida, FL, 2024
18th Kenneth L. Lee Lecture, The Queen Mary, CA, Los Angeles Geo-Institute, 2024.
20th Gerald A. Leonards Lecture, Purdue Univ., IN, 2024
Otto Glogau Award, New Zealand Society for Earthquake Engineering (best NZSEE paper award), 2023
H. Bolton Seed Medal, American Society of Civil Engineers, 2022
Karl Terzaghi Award, American Society of Civil Engineers, 2019
The Osterberg Lecture, Northwestern Univ., Chicago, IL, 2019
Geotechnical Engineering Distinguished Seminar Series Lecture, Reno, NV, 2019
Outstanding Paper Award, 7ICEGE, Technical Committee on Earthquake Geotechnical Engineering, ISSMGE, 2019
6th Ishihara Lecturer, Technical Committee on Earthquake Geotechnical Engineering and Associated Problems, ISSMGE, 2017
25th Buchanan Lecture, Texas A&M, College Station, Texas, 2017
Best Practice Paper Award, New Zealand Society for Earthquake Engineering Conference, 2017
Erskine Fellow, University of Canterbury, Christchurch, New Zealand, 2017.
Haley & Aldrich Distinguished Lecture in Geotechnical Engineering, Univ. of Massachusetts, Amherst, 2016
Sowers Lecture, 18th Annual Sowers Symposium, Geo-Institute, Georgia Chapter & Georgia Tech, Atlanta, 2015
Outstanding Paper Award for Earthquake Spectra, 2014
Mueser Rutledge Lecture, American Society of Civil Engineers Metropolitan Section, New York, 2014
Ralph B. Peck Award, American Society of Civil Engineers, 2013
Fulbright Award, U.S. Fulbright Scholarship to New Zealand, 2013
William B. Joyner Lecture Award, Seismological Society of America & Earthquake Engineering Research Institute, 2012
Erskine Fellow, University of Canterbury, Christchurch, New Zealand, 2012
Thomas A. Middlebrooks Award, American Society of Civil Engineers, 2010
Fellow, American Society of Civil Engineers, 2006
Shamsher Prakash Research Award, Shamsher Prakash Foundation, 1999
Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers, 1997

American Society of Civil Engineers Technical Council on Forensic Engineering Outstanding Paper Award, 1995
North American Geosynthetics Society - State of the Practice Award of Excellence, 1995
North American Geosynthetics Society - Geotechnical Engineering Technology Award of Excellence, 1993
David and Lucile Packard Foundation Fellowship for Science and Engineering, 1992-1997
Presidential Young Investigator Award, National Science Foundation, 1991-1996
American Society of Civil Engineers Trent R. Dames and William W. Moore Award, 1992-1993
National Science Foundation Fellowship in Engineering (3-year graduate scholarship), 1980-81, 1986-88
Commandant's Award (Highest rating in U.S. Army Engineer Officer Advanced Course), 1985
Italian Veterans of Foreign Wars Award (Outstanding United States Military Academy graduate), 1980
The Robert E. Lee Memorial Award (Highest rating in Mathematics), 1980
West Point Fund Award (Highest rating in Advanced Engineering Fundamentals), 1980
National Society of the Veterans of Foreign Wars of the United States Award (Highest rating in Physics), 1980
General Terry de la Mesa Allen Award (Highest rating in Military Science), 1980
The Association of Graduates Award (Cadet with the 3rd highest overall class standing), 1980
Distinguished Cadet (Honor roll of cadets with academic standing within top 5%), 1976-1980
The Ancient and Honorable Artillery Company of Massachusetts Award (Outstanding Company Commander), 1979
Phi Kappa Phi Honor Society, 1978
General Buckner Military Stakes Award (Highest rating in cadet military training competition), 1977
Military Awards: Meritorious Service Medal, Army Commendation Medal with Three Oak Leaf Clusters, Army Achievement Medal, Overseas Service Ribbon, Army Service Ribbon, Parachutist Badge

PROFESSIONAL QUALIFICATIONS

Registered Professional Civil Engineer in California, No. C 45519, since 1990
Registered Professional Engineer in Virginia, No. 0402015644, since 1985

PROFESSIONAL ENGINEERING EXPERIENCE

CORPS OF ENGINEERS OFFICER, 416th Engineer Command, USAR (FEB 1987 - SEP 1991)
Developed and conducted facility engineer and environmental surveys of USAR Centers

PROJECT ENGINEER, Dames & Moore, CA (FEB 1990 - JUL 1990)
Developed and completed the geotechnical and seismic design study for the repairs of wharves damaged at Oakland Army Base during the 1989 Loma Prieta Earthquake.

SENIOR PROJECT ENGINEER, Baltimore Dist., Corps of Engineers, VA (APR 1985 - AUG 1986)
Managed a field office staff of 5 engineers and inspectors. Responsible for the quality completion of 5 separate construction contracts valued at over $28 million. Completed a $23 million high technology DOD facility on schedule and within budget, including negotiation of over $8 million of owner requested contract modifications.

COMPANY COMMANDER, Construction Engineer Company, South Korea (JUL 1983 - AUG 1984)
Commanded a 218 person/106 equipment engineer company composed of Americans and Koreans. Designed and managed 8 construction projects valued at over $1 million. Innovative retaining wall design prevented cancellation of tank range project. Attained highest company rating in yearly field evaluation. Installation was cited as the most improved in Korea.

PLATOON LEADER, Construction Engineer Company, South Korea (FEB 1982 - JUN 8193)
Leader of 4 of the company's 5 platoons. Led 154 American and Korean soldiers. Project Engineer of 6 construction projects valued at over $1 million. Rated as the top lieutenant in the battalion. Unit placed second in separate competitions for the best engineer company and the best equipment maintenance program in the U.S. Army.

ASSISTANT PROJECT ENGINEER, Jacksonville Dist., Corps of Engineers, FL (JUN 1980-SEP 1980)
Technical Inspector on a $2 million earth canal/concrete weir project. Developed contractor claim denial which saved the government $89,000.

ACADEMIC EXPERIENCE

DISTINGUISHED PROFESSOR, University of California, Berkeley, CA (JUL 2018 - Present)
PROFESSOR, University of California, Berkeley, CA (JUL 1999 – JUN 2018)
ASSOCIATE PROFESSOR, University of California, Berkeley, CA (JUL 1996 – JUN 1999)
ASSISTANT PROFESSOR, University of California, Berkeley, CA (JAN 1993 - JUN 1996)
Teaching and performing research in the areas of geotechnical engineering, earthquake engineering, environmental geotechnics, and numerical and physical modeling.

ASSISTANT PROFESSOR, Purdue University, West Lafayette, IN (AUG 1990 – DEC 1992)
Developed and taught geotechnical engineering courses and performed research in the areas of earthquake engineering, numerical and physical modeling, and geo-environmental engineering.

LECTURER, University of California, Berkeley, CA (JAN 1990 - MAY 1990)
Taught "Advanced Soil Mechanics Laboratory" graduate course and conducted an investigation of the dynamic response of 5 earth dams strongly shaken by the 1989 Loma Prieta Earthquake.

RESEARCH ASSISTANT, University of California, Berkeley, CA (AUG 1988 - JAN 1990)
Investigated fault rupture propagation through earth dams (Advisors: Drs. H.B. Seed & R.B. Seed). Analyzed the dynamic response of two earth dams for CSMIP. Developed soil-structure interaction finite element program (SSCOMPPC) with interactive graphics post-processing (FEAPPLOT).

PROFESSIONAL AFFILIATIONS

Fellow, American Society of Civil Engineers, Geotechnical Engineering Institute
Member, International Society for Soil Mechanics and Geotechnical Engineering
Member, Earthquake Engineering Research Institute
Member, United States Society on Dams
Member, New Zealand Geotechnical Society
Member, The Honor Society of Phi Kappa Phi

PROFESSIONAL SERVICE

Chair, Technical Committee on Earthquake Geotechnical Engineering and Associated Problems, International Society for Soil Mechanics and Geotechnical Engineering, 2024-present.
Vice-Chair and Member, Seismic Advisory Board, California Department of Transportation (Caltrans), 2020-present.
Member, Nominating Committee, CEE Section 4 - U.S. National Academy of Engineering, 2024-present.
Member, Steering Committee, Tailings and Industrial Waste Engineering (TAILENG) Center, 2020-present.
Editorial Advisory Board, Geotechnical, Geological and Earthquake Engineering Series, 2006-present.
Member, Steering Committee and Scientific Committee of the 5th International Conference on Performance-Based Design in Earthquake Geotechnical Engineering (PBD-V), 2024-2026.
Organizer & Moderator, NSF-NHERI SimCenter Community Roundtable Webinar "Liquefaction-Induced Hazards Effects on Buried Utilities," October 9, 2024.
Member, Technical Committee on Earthquake Geotechnical Engineering and Associated Problems, International Society for Soil Mechanics and Geotechnical Engineering, 2015-2024.
Member, Publication Review Committee, US Society on Dams, Analysis of Seismic Deformations of Embankment Dams, 2021-2022
Member, Steering Committee and Scientific Committee of the 4th International Conference on Performance-Based Design in Earthquake Geotechnical Engineering (PBD-IV), 2020-2022.
Secretary, Section 4 – Civil & Environmental Engineering, U.S. National Academy of Engineering, 2020-2022.
Outstanding Reviewer, *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 2021.
Chair and Member, Younger Researcher Award Selection Committee, Technical Committee on Earthquake Geotechnical Engineering and Associated Problems, ISSMGE, 2016-2020.
Member, University of California Office of the President Seismic Advisory Board, 2017-2020.
Member, City and County of San Francisco, Department of Building Inspection (SFDBI) Geotechnical Guidance Committee for Foundations of Tall Buildings, 2019.

Member, Advisory Committee of the 7th International Conference on Earthquake Geotechnical Engineering (7ICEGE), 2018-2019.
Chair, Geotechnical Extreme Events Reconnaissance (GEER) Association Steering Committee, 2008-2018.
Member, Committee on Geological and Geotechnical Engineering, National Academy of Engineering, 2016-2018.
Member, Editorial Board, Earthquake Engineering and Structural Dynamics, 2015-2017.
Member, Technical Program Committee, 3rd Inter. Conf. Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), 2016-2017.
Member, NHERI Science Task Group to prepare 5-Year NHERI Science Plan, 2016-2017.
Member, Pacific Earthquake Engineering Research Center Project to Develop Guidelines for Performance-Based Seismic Design of Tall Buildings, 2016-2017.
Chair, U.S.–New Zealand–Japan International Workshop on "Liquefaction-Induced Ground Movements Effects," University of California, Berkeley, California, 2–4 November 2016.
Editorial Board, International Journal of GeoEngineering Case Histories, 2012-2013.
Session Organizer and Moderator, "Structure-Soil-Structure-Interaction Panel," 10th U.S. National Conference on Earthquake Engineering, EERI, July 24, 2014.
Editorial Board, Geosynthetics International Journal, International Geosynthetics Society, 1998-2013.
Editor-In-Chief, International Journal of GeoEngineering Case Histories, 2004-2012.
Member, Advisory Committee on Earthquake Hazards Reduction (ACEHR), National Earthquake Hazards Reduction Program (NEHRP), 2007-2011.
Chair and Member, Honors Committee, Earthquake Engineering Research Institute, 2010 & 2008-2009.
Editorial Board, Journal of Geotechnical Engineering, American Society of Civil Engineers, 1993-2009.
Chair, Nominating Committee, Earthquake Engineering Research Institute, 2009.
Vice-President, Earthquake Engineering Research Institute, 2007-2009.
Member, Technical Advisory Committee, Alquist-Priolo Earthquake Fault Zoning Act, State Mining and Geology Board, Department of Conservation, State of California, 2007-2015.
Board of Directors, Earthquake Engineering Research Institute, 2006-2009.
Member International Advisory Committee International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, IS-Tokyo 2009, 2008-2009.
Participant, National Research Council Workshop on "National Earthquake Resilience - Research, Implementation, and Outreach," 2009.
Advisor, Task Force on Seismic Slope Stability, Association of Professional Engineers and Scientists of British Columbia, Canada, 2007-2008.
Member, Organizing Committee and Moderator, International Symposium on Waste Mechanics, ASCE Geo-Institute, GeoCongress 2008, New Orleans, March 11-13, 2008.
Chair, Geo-Engineering Earthquake Reconnaissance (GEER) Association Steering Committee, 2004-2008.
Member, National Steering Committee of the Advanced National Seismic System, a Subcommittee of the Scientific Earthquake Studies Advisory Committee, U.S. Geological Survey, 2001-2006.
Member, Earthquake Engineering Research Institute 8th US Nat. Conf. EQ Engrg. Program Comm., 100th Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, 2005-2006.
Steering Committee, 11th Intl. Conf. on Soil Dynamics & EQ Engrg. And 3rd Intl. Conf. on EQ Geotech. Engrg., University of California, Berkeley, Jan. 7-9, 2004.
Member, Geosciences Subcommittee, California Seismic Safety Commission, 2001.
General Reporter, 4th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, Session X – Case Records, San Diego, CA, March 2001.
Moderator, Seismic Fault-Induced Failures Workshop, Japan Society for the Promotion of Science, University of Tokyo, Japan, January 11-12, 2001.
Member, Joint Management Committee, PG&E and Pacific Earthquake Engineering Research Center Directed Studies Program, 1996-2000.
Member, Center for Geotechnical Modeling Advisory Committee, U.C. Davis, 1996 - 2000.
Member, Advisory Committee for the Berkeley Seismographic Station, 1995 - 2000.
Member, Organizing Committee, First Japan-U.S. Frontiers of Engineering Symposium, U.S. National Academy of Engineering, 1999-2000.
Member, Advisory Committee for the Earthquake Engineering Research Center, 1999-2000.
Member, Advanced National Seismic System Interim National Committee, 2000.
Participant, Association of Drilled Shaft Contractors, Civil Engineering Faculty Workshop, 2000.
Discussion Leader, 2nd International Conference on Earthquake Geotechnical Engineering, Lisbon, Portugal, June

1999.
Participant, ROSRINE Data Dissemination Workshop, NSF, Los Angeles, CA, December 15-16, 1998.
Facilitator and Presenter, US-Japan Workshop on Geotechnical Earthquake Engineering Issues, NSF, Tokyo, Japan, June 24-26, 1997.
Member, United States Geological Survey - NEHRP Proposal Review Panel, June 13, 1997.
Participant, NCEER Workshop on National Representation of Seismic Ground Motion for New and Existing Highway Facilities, San Francisco, CA, May 29-30, 1997.
Facilitator, Evaluation of and Mitigation within Coseismic Zones of Surface Deformation Workshop, Calif. Div. of Mines and Geology and So. Calif. Earthquake Center, LA, CA, May 13-14, 1997.
Session Leader, Geosynthetics' 97 Conference, Long Beach, CA, March 11-13, 1997.
Member, National Science Foundation - Siting & Geotechnical System Proposal Review Panel, 1996.
Coordinator and Participant, North America - Japan Workshop on Geotechnical Aspects of the Kobe, Loma Prieta and Northridge Earthquakes, NSF, Osaka, Japan, January 22-24, 1996.
Participant, Future Directions II, Workshop for the National Science Foundation Earthquake Hazards Mitigation Program, August 3 -4, Washington D. C., 1995
Conference Group Leader, CUREe Northridge Earthquake Research Coordination Project Conference, December 2-3, Los Angeles, CA, 1994.
Speaker, NSF Workshop on Research Priorities for Seismic Design of Solid-Waste Landfills, Aug. 26-27, 1993.
Steering Committee Member, Geotechnical Group, ASCE, San Francisco Section, 1993-1994.
Member, Publications Committee, ASCE Stability and Performance of Slopes and Embankments-II Conf., 1992
Participant, NCEER/SEAOC Workshop on Site Response during Earthquakes and Seismic Code Provisions, November 18-20, Los Angeles, CA, 1992.
Reviewer, numerous journal papers, conference papers, and books, 1990-present.

ACADEMIC SERVICE

University Courses Taught

(a) University of California at Berkeley

CE 175 - "Geotechnical and Geoenvironmental Engineering" (3 semester units)
CE 177 - "Foundation Engineering Design" (3 semester units)
CE 179 - "Geosystems Engineering Design" (3 semester units)
CE 270L - "Advanced Soil Mechanics Laboratory" (3 semester units)
CE 272 - "Numerical Modeling in Geomechanics" (3 semester units)
CE 273 - "Advanced Geotechnical Testing and Design" (3 semester units)
CE 275 - "Geotechnical Earthquake Engineering" (3 semester units)
CE 277 - "Advanced Foundation Engineering" (3 semester units)

(b) Purdue University

CE 383 - "Geotechnical Engineering I" (3 semester units)
CE 483 - "Geotechnical Engineering II" (3 semester units)
CE 680 - "Theoretical Soil Mechanics" (3 semester units)
CE 687 - "Foundation Problems in Earthquake Engineering" (3 semester units)
CE 697N - "Numerical Methods in Geomechanics" (3 semester units)

Research Supervision

(a) University of California at Berkeley

MS

"Relation of Surficial Earth Materials to the Characteristics of the June 28, 1992 Landers Earthquake Surface Rupture," masters of science research topic of Johanna Fenton, 1994.

"Characteristics of Fault Rupture, Adjacent to Distressed Structures, Landers, CA", masters of science research topic of Diane Murbach, co-supervised with Prof. T.K. Rockwell, 1994.

PhD

"Mechanical Properties and Response of Geomembranes," doctoral research topic of Scott Merry, 1995.

"The Response of Earth Structures to Surface Fault Rupture," doctoral research topic of Carlos Lazarte, 1996.

"Seismic Response of Deep Stiff Soil Deposits," doctoral research topic of Susan Chang, 1996.

"Seismic Response of Solid-Waste Landfills," doctoral research topic of Anthony Augello, 1997.

"Discontinuous Deformation Analysis of Particulate Media," doctoral research topic of Patricia Thomas, 1997.

"Nonlinear and Two-Dimensional Seismic Response Studies of Solid-Waste Landfills," doctoral research topic of Ellen Rathje, 1997.

"Dynamic Properties of Cohesive Soils over Wide Strain and Frequency Ranges," doctoral research topic of William Gookin, co-supervised with Prof. M. Riemer, 1998.

“Physical Model Studies of Seismically Induced Deformation of Slopes,” doctoral research topic of Joseph Wartman, co-supervised with Prof. R. B. Seed, 1999.

“Near-Fault Seismic Site Effects,” doctoral research topic of Adrian Rodriguez-Marek, 2000.

"The Application of Discrete Element Modelling to Finite Deformation Problems in Geomechanics," doctoral research topic of Catherine O'Sullivan, 2002.

"Ground Failure and Building Performance in Adapazari, Turkey," doctoral research topic of Rodolfo Sancio, 2003.

"Optimal Ground Motion Intensity Measures for Probabilistic Assessment of Seismic Slope Displacements," doctoral research topic of Thaleia Travasarou, 2003.

“Physical Model Studies of Seismic Slope Response and Performance,” doctoral research topic of Wei-Yu Chen, co-supervised with Prof. R. B. Seed, 2004.

“Static and Dynamic Properties of Municipal Solid-Waste,” doctoral research topic of Dimitris Zekkos, 2005.

“Liquefaction Susceptibility, Resistance, and Response of Silty and Clayey Soils,” doctoral research topic of Jennifer Donahue, 2007.

“Probabilistic Design Procedure for Assessing the Effects of Lateral Spreading on Bridge Foundations,” doctoral research topic of Christian Ledezma, 2007.

“Towards Developing an Engineering Procedure for Evaluating Building Performance on Softened Ground,” doctoral research topic of Shideh Dashti, 2009.

“Seismic Performance Assessment in Dense Urban Environments,” doctoral research topic of Henry B. Mason, 2011.

“Dynamic Soil-Structure-Interaction Analysis of Structures in Dense Urban Environments,” doctoral research topic of Katherine C. Jones, 2013.

“Earthquake Surface Fault Rupture Interaction with Building Foundations,” doctoral research topic of Nicolas Oettle, 2013.

"Seismic Performance of Buildings Subjected to Soil Liquefaction," doctoral research topic of Joshua Zupan, 2014.

"Static and Seismic Performance of California Levees," doctoral research topic of Michelle Shriro, 2014.

"Response of a Soft, High Plasticity, Diatomaceous Naturally Cemented Clay Deposit," doctoral research topic of Xavier Vera-Grunauer, co-supervised with Prof. J. M. Pestana, 2014.

"Liquefaction-Induced Building Performance and Near-Fault Ground Motions," doctoral research topic of Connor Hayden, 2014.

"Response of Liquefiable Sites in the Central Business District of Christchurch, New Zealand," doctoral research topic of Christopher Markham, 2015.

"Numerical Analysis of Liquefaction-Induced Building Settlement," doctoral research topic of Roberto Luque, 2017.

"Fine-Grained Soil Liquefaction Effects in Christchurch, New Zealand," doctoral research topic of Christine Beyzaei, 2017.

"Simplified Procedures for Estimating Earthquake-Induced Displacements," doctoral research topic of Jorge Luis Macedo Escudero, 2017.

"Discrete Element Analysis of Surface Fault Rupture," doctoral research topic of F. Estefan Thibodeaux Garcia, 2018.

"Effective Stress Analysis of Liquefaction Sites and Evaluation of Sediment Ejecta Potential," doctoral research topic of Daniel Hutabarat, 2020.

"Liquefaction Ejecta-Induced Damage," doctoral research topic of Zorana Mijic, 2022.

"Free-Field Ground Settlement and Static Instability of Liquefiable Soil," doctoral research topic of Franklin Ricardo Olaya Trinidad, 2023.

"Seismic Performance of Natural Gas Transmission Pipelines Affected by Ground Failure," doctoral research topic of Christopher Bain, 2023.

"Discrete Element Modeling of Sand Production and Stress-Dependent Granular Material Response," doctoral research topic of Xinyi Qian, 2024.

"Soil-Structure Interaction Effects of Structures Affected by Liquefaction," doctoral research topic of William Zakka, ongoing research.

"Geomechanical Properties of Mine Tailings," doctoral research topic of Ashley Woodward, ongoing research.

"Dynamic Response of Shallow Bridge Foundations at Liquefiable Soil Sites," doctoral research topic of Ava Sabet, ongoing research.

"Seismic Performance of Tailings Dams," doctoral research topic of Joan Deitsch, ongoing research.

<u>Post-Doctoral</u>

"Modelling Particulate Media Using Discontinuous Deformation Analysis," postdoctoral research topic of Dr. Te-Chih Ke, 1994.

"Geotechnical Finite Element Analysis Program: GeoFEAP," postdoctoral research topic of Dr. R. David Espinoza, 1994-1995.

"Laboratory Validation of the Application of Discontinuous Deformation Analysis to Particulate Media," postdoctoral research topic of Dr. Patricia Thomas, 1998.

"Building Response in Adapazari, Turkey," postdoctoral research topic of Dr. Thaleia Travasarou, 2003-2004.

"Nonlinear Effective Stress Soil-Structure-Interaction Analysis" & "iShake" postdoctoral research topics of Dr. Shideh Dashti, 2009-2010.

"Earthquake-Induced Deformations," postdoctoral research topic of Dr. Jorge Luis Macedo Escudero, 2018.

"Seismic Fragility of Buried Natural Gas Transmission Pipelines," postdoctoral research topic of Daniel Hutabarat, 2020-2023.

(b) Purdue University

MS

"Axisymmetric Testing and Design of High Density Polyethylene Geomembranes," master of science research topic of Scott Merry, co-supervised with Prof. P.L. Bourdeau, 1993.

"Seismic Response of Landfills," master of science research topic of Anthony Augello, co-supervised with Prof. G. A. Leonards, 1993.

PhD

"Characteristics of the Deep Old Bay Clay Deposits in the East San Francisco Bay Area," doctoral research topic of Soumitra Guha, co-supervised with Prof. V.P. Drnevich, 1995.

(c) Other University of California Campuses

MS

"Forced Vibration Test in a Centrifuge Test Investigating SSSI Effects," master of science research topic of Benjamin Choy, UC Davis, 2010, second reader.

"Assessment of Potential for Interaction between Vibrating Surface Footings," master of science research topic of Hamilton Puangnak, UC Davis, 2012, third reader.

PhD

"Seismic Site Response of Liquefiable Soil Deposits," doctoral research topic of James Gingery, second reader working with Prof. A. Elgamal, 2015.

University Administration

Leader, GeoSystems Program, Dept. of Civil and Environmental Engrg., 2015-2024 (except Fall 2023).
Member, Library Committee, 2017-2023.
Member, College of Engineering Ethics & Social Responsibility Committee, 2019-2023.
Member, Univ. of California Office of the President Seismic Advisory Board, 2017-2020.
Member, Committee for Undergraduate Scholarship and Honors (CUSHFA), 2007-2012, 2013-2015.
Member, Berkeley Campus Seismic Review Committee, 2002-2012, 2013-2016.
Member, Dept. of CEE, Strategic Planning Committee, 2013-2016.
Member, Resilience Engineering Faculty Search Committee, Depart of CEE, 2014-15.
Member, Business Resumption Coordination Group, 2007-2012.
Member, Assistant Vice Chancellor & Director of the Financial Aid and Scholarships Office (FASO) Search Committee, 2011.
Member, Graduate Admissions Committee, Dept of CEE, 2009-2011.
Graduate Adviser, Dept. of CEE, 2010-2012.

Undergraduate Advisor, Dept. of CEE, 2007-2017.
Member, Dept. of CEE, Strategic Planning Committee, 2010-2011.
Chair, High Performance Structural Engineering Faculty Search Committee, Depart of CEE, 2007-2008.
Member, Ad hoc Committee on PEER Organizational Structure, 2007.
Chair, High Performance Structural Engineering Faculty Search Committee, Depart of CEE, 2006-2007.
Leader, GeoEngineering Group, Executive Committee, Depart. of Civil and Environmental Engrg., 2001-2004.
Chair, Advisory Committee for the Earthquake Engineering Research Center, 2003-2004.
Member, Chancellor's Advisory Committee on Intercollegiate Athletics, 2003-2004.
Member, Task Force To Review Administrative Structures and Business Processes for the Engineering Organized Research Units, 2002-2004.
Chairman, Earthquake Engineering Research Center Director Search Committee, 2002.
Chairman, Strategic Planning Committee, Depart. of Civil and Environmental Engineering, 2000.
Member, Strategic Planning Committee, College of Engineering, 1999-2000.
Graduate Adviser and Admissions Officer, Depart. of Civil and Environmental Engineering, 1997-2000.
Member, Strategic Planning Committee, Depart. of Civil and Environmental Engineering, 1997-1999.
Chairman, Civil Engineering Faculty Search Committee, 1999.
Member, Undergraduate Studies Committee, 1994-1997.
Undergraduate Adviser, Department of Civil Engineering, 1993-1997.
Member, College of Engineering's Interdisciplinary Committee for Ocean Engineering, 1993-1997.
Member, Civil Engineering Faculty Search Committee, 1996.
Faculty Mentor, Summer Undergraduate Program in Engineering Research at Berkeley for Underrepresented Students of Color and Women, 1994
Member, Civil Engineering Faculty Search Committee, 1994.
Member, Civil Engineering Faculty Search Committee, 1993.
Coordinator, Geotechnical Engineering Seminars, 1990-1992.
Chairman, Geotechnical Engineering Curriculum Committee, 1991-1992.
Member, Design Committee, School of Civil Engineering, 1990-1991.
Coordinator, Civil Engineering Participation in the Midwest Talent Search Program, 1990-1991.
Member, Grievance Committee, Schools of Engineering, 1991-1992.
Member, Parents Day and High School Day Committee, School of Civil Engineering, 1991-1992.

CONSULTING EXPERIENCE

Compañía Minera Antamina S.A.: Serving on the Independent Technical Review Board on the Antamina Mine, Peru, 2024-present.

Geosismica: Perform independent peer review of the seismic geotechnics, seismic site response analyses, and dynamic FLAC analyses performed by KCB in support of the design of the tailings storage facility at the Lundin Gold Mine, Ecuador, 2024 – present.

Anglo American: Serving on the Technical Review Panel for the Quellaveco mine storage facilities, Peru, 2023-present.

Anglo American: Serving on the Technical Review Panel for the El Torito and Las Tranques 1-4 tailings storage facilities of the El Soldado Mine, Chile, 2022-present.

Anglo American: Serving on the Technical Review Panel for the Las Tortolas and Perez Caldera 2 tailings storage facilities of the Los Broncos Mine, Chile, 2022-present.

AECOM: Serving on the Technical Review Board of Coyote, Chesbro, and Uvas dams, San Francisco Bay Area, 2023-present.

PIEL: Provide guidance seismic deformation check analysis of the Martabe Gold Project Tailings Storage Facility, North Sumatra, Indonesia, 2022-present.

Klohn Crippen Berger: Provide guidance on PCON ejecta potential due to liquefaction and seismic deformation analyses at the Grasberg Pyrite Tailings Storage Facility, Papua, Indonesia, 2022-present.

CGU Professional Risks Insurance: Consultation and expert opinion on the legal case involving the 2018 Northern Tailings Storage Facility Embankment Failure, Cadia Valley Operations, Australia, 2025.

Wolverines Lessee, LLC: Provided guidance and peer review services for the earthquake surface fault rupture hazard for seismic retrofit of the Mondrian Hotel, which is situated atop the Hollywood fault, West Hollywood, CA 2024-25.

WSP: Provide peer review services on the Natural Gas Power Plant project at the PT Freeport Indonesia mining site, Papua, Indonesia, 2024.

Alan Kropp & Associates: Provided earthquake engineering guidance on the evaluation of a proposed development at a residential property in the Portola Valley, California, 2024.

Port of San Francisco: Providing guidance to the Port of San Francisco regarding the earthquake engineering review of the San Francisco Seawall Earthquake Safety and Disaster Prevention Program seismic assessment, CA, 2018-2023.

San Francisco DBI: Geotechnical engineering design peer review services for the design of a tall building at 98 Franklin St., San Francisco, CA, 2021-2024.

San Francisco DBI: Geotechnical engineering design peer review services for the design of a tall building at 95 Hawthorne St., San Francisco, CA, 2021-2024.

SRK Consulting: Provide guidance on the static and seismic performance of two tailings dams in South Africa, 2022.

AECOM: Peer review seismic hazard assessment, ground motion selection, and seismic site response of Caltrain Downtown Extension Project, San Francisco, CA, 2021-2022.

Applied Technology Council: Co-author the USGS plan for post-earthquake reconnaissance under the National Earthquake Hazard Reduction Program, USA, 2021-2022.

Cotton Shires Associates: Provided guidance regarding the re-evaluation of the stability of the Bear Gulch Dam, Atherton, CA, 2014-2022.

BART Transbay Tube: Peer review services for the reanalysis of the BART Transbay Tube, San Francisco, CA, 2020-2022.

URS Corporation: Peer review services of the ground motion selection and seismic site response analysis for the Transbay DTX tunnel project, San Francisco, CA, 2021-2022.

PG&E: Peer review services for the assessment of the seismic retrofit of 115kV underground transmission lines, San Francisco, CA, 2020-2021.

Alan Kropp & Assoc.: Member of seismic peer review team for proposed liquefaction mitigation at the Riverside School, San Pablo, CA, 2021.

Folsom Area Stormwater Improvement Project: Geotechnical earthquake engineering guidance on a large-diameter stormwater tunnel is San Francisco, CA, 2019-2020.

Mandalay Business Capital City Development, Ltd.: Provided guidance as part of a Tonkin & Taylor, Ltd. geotechnical earthquake consultant team about the seismic design issues of a large urban development project built on liquefiable soils along the Irrawaddy River near Mandalay, Myanmar, 2018-2020.

Oceana Gold NZ Ltd.: Independent consultant advice on the static and seismic design of a new tailing dam embankment as part of Project Quattro, Wahi, New Zealand, 2017-2019.

CentrePort Wellington: External peer reviewer on the CentrePort seismic resilience project, Wellington, NZ, 2017-2019.

Alan Kropp & Associates: Assisted in the seismic evaluation of the Keith Avenue Landslide at Oxford Elementary School, Berkeley, CA, 2018-2019.

San Francisco International Airport: Building Inspection & Code Enforcement: Geotechnical peer review of the seismic design of two jet fuel storage tanks on a soft clay site at SFO, San Francisco, CA, 2019.

Schnader Harrison Segal & Lewis LLP: Served as expert on legal case concerning seismic performance of Chrin Landfill, PA, 2018-2019.

GMI S.A. INGENIEROS: Review of liquefaction assessments performed at the Talara Refinery, Peru, 2018.

Farmland Preservation LP: Served as expert on legal case involving the seismic performance of Frey Farm Landfill, PA, 2018.

Coffey: External peer reviewer on the Lyttelton Port of Christchurch Te Bay Reclamation Stage 1 Project, Lyttelton, NZ, 2017.

Nuevo Aeropuerto International de la Ciudad de México (NAICM): Served as member of an international expert panel on seismic engineering for the performance-based design of the new airport in Mexico City, Mexico, 2015-2017.

760 Mission Structural Design Review Team: Served as a member of a 4-person peer review committee that reviewed the seismic and geotechnical engineering aspects of the 760 Mission tall building project, 2016-2017.

Ministry of Business, Innovation, and Employment, New Zealand: Served as member of an international peer review panel that examined the proposed "Guidance for Repairing and Rebuilding Foundations in Technical Category 3 (TC3)" document and several other proposed geotechnical guidance documents, Canterbury, NZ, 2012-2017.

Attorney General of Washington: Served as legal expert on the SR-530 landslide case, WA, 2014-2016.

Park Tower Structural Design Review Team: Served as a member of a 3-person peer review committee that reviewed the seismic and geotechnical engineering aspects of the Park Tower project, 2015-2016.

New Zealand Earthquake Commission: Served as member of a four-person international peer review panel that reviewed the procedures used to evaluate land damage due to increased vulnerability to liquefaction, Canterbury, NZ, 2012-2015.

LUCY Tailings Berm: Served as a member of a 2-person liquefaction experts team to assist GHD engineers in the seismic assessment of a tall tailings berm in New Caledonia, 2015.

Christchurch City Council: Provided independent static and seismic assessment of the Christchurch City Art Gallery for an Insurance Claim Dispute, Christchurch, New Zealand, 2015.

Kleinfelder: Served as peer reviewer for surface fault rupture mitigation design aspects of the Mid Coast Corridor Transit Project, San Diego, CA 2014-2015.

Transbay Tower Structural Design Review Team: Served as a member of a 4-person peer review committee that reviews the seismic and geotechnical engineering aspects of the Transbay Tower project, the tallest building in San Francisco, 2013-2015.

City of Irwindale: Provided technical guidance regarding the geotechnical evaluation of large inert debris fills, Irwindale, CA, 2009-2015.

Geosyntec Consultants: Served as an adjunct senior consultant on several engineering projects and matters, including foundation recommendations for a large industrial project in Saudi Arabia, seismic slope stability assessment in Anchorage, static and dynamic soil properties evaluations, ground motion selection for a nuclear power plant, and seismic evaluations of several solid-waste landfills and earth structures, including dams and levees, 2007-2014.

California Water Service Company: Performed third party review of the stability evaluations and performing peer-review of re-evaluation of Bear Gulch Dam, Atherton, CA, 2012-2013.

RMC Geoscience, Inc.: Served as a member of a 3-person peer review panel examining the stability of the Keller Canyon municipal solid waste landfill toe berm, 2013.

California High-Speed Train Project Technical Advisory Panel: Served as a member of an expert advisory panel that is provided guidance on the procedures used to develop design guidelines and seismic criteria, 2010-2013.

Transbay Transit Center Structural and Seismic Design Review Committee: Served as a member of a committee that reviews the seismic and geotechnical engineering aspects of the Transbay Transit Center project, 2009-2013.

ATC: Project Technical Committee member for ATC-101: Development of updated NEHRP post-earthquake investigation strategy, Phase I, Redwood City, CA, 2013.

Engineering Geology LTD: Provided specialized advice on the seismic response of the Irishman Creek embankment of the critical Tekapo Canal system in the South Island of New Zealand, 2012.

Tappan Zee Bridge, MRCE: Provided advice regarding the geotechnical assessment of seismic soil response as part of the Tappan Zee Bridge assessment project in New York, 2012.

Central Subway, Chinatown Station, SFMTA: Served on a two-person peer review panel that provided the City of San Francisco advice regarding the proposed design of the Chinatown excavation and station, 2012.

Canterbury Earthquake Royal Commission: Reviewed geotechnical/foundation post-earthquake report prepared for Commission and provided guidance in sworn testimony during proceedings, 2011.

CUREE: Performed research on near-fault ground motions and participated in preparation of the ATC-82 guidance document on the selection and use of earthquake ground motions in design, 2010-2011.

Cotton, Shires & Associates: Provided guidance regarding the static and seismic stability of a levee embankment utilization project, 2010-2011.

MRCE: Provided guidance regarding the seismic evaluation of the Queensboro Bridge, NY, 2010-2011.

BART Peer Review Panel: Served as a member of the panel that reviews seismic aspects of the BART Earthquake Safety Program retrofit design strategies, including those for the Transbay Tube system, 2004-2010.

Cotton, Shires & Associates: Provided assistance on landslide stabilization project, Santa Barbara, Calif., 2006-2010.

Hotel Del Coronado: Provided guidance on the design of a conference center that is adjacent to the Coronado fault, 2010.

Alan Kropp & Associates: Provided guidance regarding the evaluation and mitigation of liquefaction, lateral spreading, and seismic slope instability at the Riverside Elementary School, San Pablo, Calif., 2009-2010.

Alan Kropp & Associates: Provided guidance on the seismic loading and stability of a hazardous material handling facility, LBNL, Berkeley, Calif., 2007-2010

Suisun Marsh Scientific and Technical Advisory Panel: Advised officials on the technical aspects of the Suisun Marsh Plan, including levee stability, 2006-2009.

MRCE: Provided guidance regarding the seismic hazard assessment and performance of a large underground facility near the Hudson River, NY, 2008-2009.

CEMEX: Provided guidance regarding the static and seismic stability of a deep quarry excavation near a housing development, Livermore, Calif., 2004-2008.

Geologic Associates: Developed earthquake ground motions and provided guidance for seismic analyses of a solid-waste landfill in San Jose, Calif., 2006-2008.

FMSM Engineers: Expert review panel member for the development of a liquefaction-induced seismic deformation screening tool for dams and levees for the US Corps of Engineers, Louisville District, KY, 2006-2007.

Shannon & Wilson, Inc: Performed independent expert review for the Municipality of Anchorage Geotechnical Advisory Commission of the Northwest Turnagain Landslide Stability Evaluation report, Alaska, 2006.

Diaz Yourman & Associates: Provided guidance regarding the evaluation of liquefaction and seismic stability at the Port of Los Angeles Pier 400 crude oil terminal facility, Calif., 2005-2006.

Caltrans Technical Advisory Panel: Served as member of panel that reviews surface fault rupture and ground motion hazards on the SR 75/282 Transportation Corridor project, Coronado, Calif., 2005-2006.

Blackhawk Geologic Hazard Abatement District: Providing guidance regarding slope stabilization program, 2004-2006.

Alan Kropp & Associates: Provided guidance regarding the evaluation and mitigation of liquefaction at the Downer Elementary School, Richmond, Calif., 2005.

Geosyntec Consultants: Prepared opinion letter regarding the static and seismic stability of solid-waste landfills, 2005.

Diaz Yourman & Associates: Provided guidance regarding liquefaction issues at a Port of Long Beach waterfront structure, Calif., 2004-2005.

GeoPentech: Provided guidance regarding the construction of an 8-story building adjacent to an active fault in Hollywood, Calif., 2000-2005.

Alternative Resolution Centers: Served as neutral geotechnical engineer in an arbitration case concerning potential damage to a home from static or seismic settlement, Studio City, Calif., 2004.

ARUP: Reviewed seismic interaction issues for the 80 Natoma Tower and Caltrain Downtown Extension projects, San Francisco, Calif., 2004.

Fugro West, Inc.: Provided guidance on finite element analysis of surface fault rupture hazard at a housing complex in Hayward, Calif., 2004

Diaz Yourman & Associates: Assisted in assessing surface fault rupture hazard at Mira Monte Reservoir Site, Calif., 2004.

Earth Consultants International: Evaluated the geotechnical earthquake hazards at a large area to be developed in Southern California and provided expert witness services for primary client, 2003.

URS Corporation: Reviewed analyses and provided guidance regarding the effects of earthquake fault rupture on the performance of Aviemore Dam, New Zealand, 2002-2003.

IT Corp.: Developed earthquake ground motions for seismic analyses of a solid-waste landfill in Burbank, Calif., 2002.

IT Corp: Developed ground motions and evaluated the seismic performance of a solid-waste landfill near Richmond, Calif., 2002-2003.

Fugro: Reviewed and provided guidance regarding the liquefaction and ground shaking hazards evaluation for the Western Expansion of the Children's Hospital, Oakland, 2002.

Risk Engineering, Inc.: Provided guidance on liquefaction for NEHRP research project on the New Madrid EQ, 2002-2003.

EMCON: Developed earthquake ground motions for seismic analyses of a solid-waste landfill near Hollister, Calif., 2001.

Morgenstein & Jubelirer, LLP.: Evaluated the potential seismic performance of a soft clay site in Foster City, CA., 1999-2000.

Zemin Technology Company: Provided guidance and recommendation for the Izmit Bay Crossing Project, Turkey, 2000.

Treadwell & Rollo: Reviewed seismic considerations regarding a proposed development atop a solid-waste landfill located in San Jose, California, 1999.

Morgenstein & Jubelirer, LLP.: Provided advice regarding a facility constructed atop a solid-waste landfill, Colma, CA, 1998.

Mr. J. R. C. Mello: Participated in the seismicity evaluation, soil liquefaction, and seismic slope stability studies for the proposed Tech Ion Bunker Site in Manaus, Brazil, 1998.

Pacific Materials Laboratory, Inc.: Performed finite element study to evaluate and to mitigate the surficial effects due to minor bedrock fault displacements at the Moorpark site in Southern California, 1997.

Fugro (West), Inc.: Developed a suite of near-field earthquake ground motions for the seismic analysis of Pleasant Valley Hospital in Camarillo, California, 1997.

EBA Wastechnologies: Assessed static and seismic stability procedures used for Toland Road Landfill, 1997.

Superior Court of the State of California, County of Orange: Appointed as the neutral geotechnical expert to assist the Court in evaluating slope-related issues in the Canyon Estates v. Mission Viejo mediation proceeding, 1997.

Bacalski, Byrne & Koska: Evaluated the seismic performance of structural fills constructed in a housing development that was strongly shaken by the 1994 Northridge earthquake, 1996.

Geotechnics America, Inc.: Studied the performance of wick drains for liquefaction mitigation, 1996.

Fugro (West), Inc.: Developed earthquake ground motions for 1994 Northridge and design scenario earthquake events for seismic stability evaluation of deep gravel pits in Southern California, 1996.

Risk Management Solutions, Inc.: Reviewed methodology for including the effects of local site conditions on ground motion characteristics in RMS model for estimating earthquake hazard, 1995.

NTL Engineering & Geoscience, Inc.: Provided guidance on the seismic stability analysis of the Flathead County Landfill, Montana, 1995.

Alan Kropp and Associates: Investigated the performance of compacted fills during the 1994 Northridge Earthquake, 1995.

Browning-Ferris Industries: Performed axisymmetric testing of deformed and undeformed 2 mm-thick HDPE, 1995.

Golder Associates: Developed seismic coefficient used in heap leach pad stability analyses at Cripple Creek, Colorado, 1994.

Advanced Engineering Consultants: Estimated construction-induced earth pressures on buried high level waste tank farm, 1993.

CUREe-Risk Management Software: Performed soil-site effects assessment for the National Institute of Building Sciences Earthquake Loss Methodology Evaluation Study, 1993.

Indianapolis Water Company: Evaluated the seismic stability of an earth embankment water supply canal, 1992.

Boult, Cummings, Conners & Berry: Investigated the failure of a reinforced soil retaining wall in Glasgow, Kentucky, 1992.

Leighton and Associates, Inc.: Performed finite element study to develop fill placement procedures to mitigate the surficial effects due to minor bedrock fault displacements at the Spanish Hills site in Southern California, 1992.

Staal, Gardner & Dunne, Inc.: Investigated the long-term stability of a closed sanitary landfill which is experiencing excessive lateral deformations, 1992.

Leighton and Associates, Inc.: Performed finite element study of a 100-ft high reinforced soil fill slope subjected to excessive foundation deformation, 1991.

Thatcher Engineering: Performed finite element study of a 60-ft deep braced excavation required to repair the Northern Indiana Public Service Company's electrical generation plant, 1991.

W.M. Cotton and Associates: Assisted engineers in developing a finite element model of a landfill experiencing excessive lateral movements, 1989.

Kaiser Aluminum Corporation: Performed finite element study of a new flexible culvert design for large-span aluminum box culvert structures, 1988.

RESEARCH GRANTS

"Seismic Design Evaluation of Shallow Bridge Foundations at Potentially Liquefiable Soil Sites," State of California, Department of Transportation (Caltrans), 3/24-2/27, $1,100,000; Principal Investigator.

"Advancing the Tailings Geotechnics Practice in Brazil," Vale S. A., subcontract through the Georgia Institute of Technology, 12/24-12/25, $211,202; Year 1 of 5-year project, with UC Berkeley total amount of $1,488,479, Principal Investigator.

"Research Related to Tailings Geotechnics," Earth Resources Fund, Inc., Unrestricted Gift, 4/24 & 4/25: $180,000.

"Performance-based Monitoring and Risk Assessment Tool for Gas Pipelines under Natural Forces," California Energy Commission, 2/24-01/27, $3,000,000; Co-Principal Investigator.

"Natural Hazards Engineering Research Infrastructure: Computational Modeling and Simulation Center." National Science Foundation, 10/21-9/25, $12,750,000; Co-Principal Investigator.

"Collaborative Research: RAPID: Subsurface Characterization of Liquefaction Case Histories from the 2023 Kahramanmaras Earthquake Sequence," National Science Foundation, 09/23-08/24, $21,320 Berkeley; Co-Principal Investigator of a 4-university grant totaling $174,310 to fund primarily fieldwork performed in Turkey.

"Assessment of the Performance of the Ground and Facilities at Wellington Port during Three Earthquakes," National Science Foundation, 04/20-03/25, $480,382; Principal Investigator.

"Performance Based Earthquake Engineering Assessment Tool for Gas Storage and Transmission System," California Energy Commission, 12/19-03/23, $4,940,158; Principal Investigator.

"Liquefaction-Induced Ground Settlement Procedure," State of California, Department of Transportation (Caltrans), 10/21-9/22, $65,000; Principal Investigator.

"Detailed Evaluation of Insightful Liquefaction Ejecta Case Histories," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 06/20-05/21, $96,974; Principal Investigator.

"Liquefaction Triggering and Effects at Silty Soil Sites," Pacific Earthquake Engineering Research Center Project, 12/17-12/19, $168,964; Principal Investigator.

"Liquefaction Consequences of Stratified Deposits of Silty Soils," National Science Foundation, 07/16-06/20, $489,337; Principal Investigator.

"Collaborative Research: Geotechnical Extreme Events Reconnaissance (GEER) Association: Turning Disaster into Knowledge," National Science Foundation, 08/13-07/19, $495,406; Principal Investigator.

"RAPID/Collaborative Research: Advanced Site Characterization of Key Ground Motion and Ground Failure Case

Histories Resulting from the M_w7.8 Kaikoura, New Zealand, Earthquake," National Science Foundation, 02/17-01/18, $39,971; Principal Investigator.

"United States-New Zealand-Japan International Workshop on Liquefaction-Induced Ground Movements Effects," National Science Foundation, 07/16-12/17, $99,942; Principal Investigator.

"Effects of Liquefaction on Structures in Christchurch," National Science Foundation, 9/1/13-8/31/17, $399,883, Principal Investigator.

"Liquefaction-Induced SFSI Damage due to the 2010 Chile Earthquake," Pacific Earthquake Engineering Research Center Project 2422004, 06/11-12/16, $144,979; Principal Investigator.

"Next Generation Liquefaction: New Zealand Data Collection," Pacific Earthquake Engineering Research Center Project 3K01-LL, 02/01/14-06/30/15, $125,318; Principal Investigator.

"RAPID: Collaborative Research: Liquefaction Triggering and Consequences for Low-Plasticity Silty Soils, Christchurch, New Zealand," National Science Foundation, 1/1/14-12/31/14, $129,997, Principal Investigator.

"Evaluating Fully Nonlinear Effective Stress Site Response Computer Programs using Records from the Canterbury Earthquake Sequence," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 06/01/13-05/31/14, $89,985; Principal Investigator.

"RAPID: Liquefaction and Its Effects on Buildings and Lifelines in the 2010-2011 Canterbury, New Zealand Earthquake Sequence," National Science Foundation, 1/1/13-12/31/13, $101,916, Co-Principal Investigator.

"Liquefaction Impact on Critical Infrastructure in Christchurch," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 12/2/11-12/1/12, $85,000; Principal Investigator.

"RAPID: Liquefaction and Its Effects on Buildings and Lifelines in the 22 February 2011 Christchurch, New Zealand Earthquake," National Science Foundation, 7/1/11-6/30/13, $99,554, Principal Investigator.

"Earthquake Surface Fault Rupture Interaction with Building Foundations," National Science Foundation, 08/09-09/13, $297,800; Principal Investigator.

"NEESR-SG: Seismic Performance Assessment in Dense Urban Environments," National Science Foundation, 10/08-3/14, $1,734,665; Principal Investigator.

"Collaborative Research: Geoengineering Extreme Events Reconnaissance (GEER) Association: Turning Disaster into Knowledge," National Science Foundation, 12/08-11/13, $277,682; Principal Investigator.

"Study of Slope Stability in Relation to Roots and Seepage & Levee Failure Forensic Study," The Sacramento Area Flood Control Agency, 10/09-03/13, $614,282, Principal Investigator.

"Rapid: Geotechnical Engineering Reconnaissance of the M 8.8 Chile Earthquake of February 27, 2010," National Science Foundation, 3/1/10-9/1/10, $96,894, Principal Investigator.

"Improved Description of the Seismic Response of Deep Soft Clay Deposits," National Science Foundation, 09/09-08/13, $277,114; Co-Principal Investigator.

"iShake: Using Personal Devices to Deliver Rapid, Semi-Quantitative Earthquake Shaking Information," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 12/1/09-11/30/10, $99,872; Principal Investigator.

"Seismic Assessment of Earth Structures Overlying Potentially Liquefiable Soils," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 12/1/08-8/31/10, $76,968; Principal Investigator.

"NEESR-II: Towards Developing an Engineering Procedure for Evaluating Building Performance on Softened Ground,"

National Science Foundation, 11/05-6/09, $300,000; Principal Investigator.

“NSF Post-Earthquake Geotechnical Reconnaissance Working Group,” National Science Foundation, 12/03-11/09, $155,705, Principal Investigator.

“The Liquefaction Susceptibility, Resistance, and Response of Silty and Clayey Soils,” U.S. Geological Survey, National Earthquake Hazards Reduction Program, 10/1/04-7/31/07, $123,150; Principal Investigator.

“PBEE Assessment of Liquefaction Effect Leading to Practical Guidance for Caltrans Bridges with Liquefaction,” Pacific Earthquake Engineering Research Center Project 2422004, 10/04-09/07, $159,003; Principal Investigator.

“Liquefaction Susceptibility, Resistance, and Response of Silty and Clayey Soils,” National Science Foundation, 8/04-7/08 $179,825, Principal Investigator.

“Collaborative Proposal: Static and Dynamic Properties of Municipal Solid Waste,” National Science Foundation, 9/02-08/07, $198,611, Principal Investigator.

“Incorporation of Efficient Ground Motion Parameters,” Pacific Earthquake Engineering Research Center, 10/03-03/05, $55,000; Principal Investigator.

“Ground Failure of Adapazari’s Fine Grain Soils and Its Interaction with Building Response,” National Science Foundation, 10/01-09/05, $238,037, Principal Investigator.

“Reconnaissance of the Geotechnical Aspects of the February 28, 2001, Nisqually Earthquake,” National Science Foundation, 09//01-08/02, $20,000, Principal Investigator.

“Seismic Performance of Ground and Buildings in Adapazari, Turkey,” National Science Foundation, 9/00-2/02, $75,000, Principal Investigator.

“Liquefaction and Ground Failure Deformation Data in Turkey,” Pacific Earthquake Engineering Research Center, 6/00-3/02, $150,000; Principal Investigator.

“Identification and Prediction of Ground Motion Parameters Relating to Damage,” Pacific Earthquake Engineering Research Center, 05/00-03/03, $125,000; Principal Investigator.

“Evaluation of Seismic Slope Stability Procedures Through Shaking Table Testing,” U.S. Geological Survey, National Earthquake Hazards Reduction Program, 9/1/00-8/31/03, $140,000; Principal Investigator.

"Geotechnical Earthquake Engineering Reconnaissance of the November 12, 1999 Duzce Earthquake," National Science Foundation, 11/12/99 - 4/30/02; $24,750, Principal Investigator.

"Geotechnical Earthquake Engineering Reconnaissance of the September 21, 1999 Chi-Chi, Taiwan Earthquake," National Science Foundation, 9/21/99 - 4/30/00; $60,000, Co-Principal Investigator.

"Geotechnical Earthquake Engineering Reconnaissance of the August 17, 1999 Izmit Earthquake," National Science Foundation, 8/17/99 - 4/16/01; $22,000, Principal Investigator.

"An Investigation of the Geotechnical Aspects of the June 1999 Central Mexico Earthquakes," National Science Foundation, 3/1/00 - 2/28/01; $12,110, Co-Principal Investigator.

“Near-Fault Seismic Site Effects," Pacific Earthquake Engineering Research Center, 4/98-4/01, $120,000; Principal Investigator.

“Seismic Response of Unsaturated, Compacted Hillside Fills,” U.S. Geological Survey, National Earthquake Hazards Reduction Program, 1/98-12/00, $147,181; Co-Principal Investigator through UCLA.

“Geotechnical Site Categories for Site Response," PG&E-PEER Research Program, 6/97-8/98, $60,000; Principal Investigator.

“Coordinated Geotechnical and Earthquake Engineering Program at UC Berkeley”, California Department of Transportation, 7/95-4/99, $1,490,655; Co-Principal Investigator.

"The Response of Earth Structures to Ground Movements and the Seismic Response of Deep Soil Deposits," The David and Lucile Packard Foundation Fellowship for Science and Engineering, 10/92-06/05; $500,000; Principal Investigator.

"Modeling and Analysis of the Response of Earth Structures to Ground Movements", National Science Foundation - 1991 Presidential Young Investigator Award, 9/91-8/97; $312,500; Principal Investigator.

"Influence of Soil Conditions on 1994 Northridge Earthquake Recorded Ground Motions", U.S. Geological Survey, National Earthquake Hazards Reduction Program, 1/95-5/96, $44,000; Principal Investigator.

"Seismic Performance of Solid Waste Landfills" National Earthquake Hazards Reduction Program, National Science Foundation, 9/94-12/95, $53,055; Principal Investigator.

“An Investigation of the Geotechnical Aspects of the January 17, 1994 Northridge Earthquake - Preliminary Assessment" National Science Foundation, 3/94-5/95, $20,000; Co-Principal Investigator.

"Seismic Response of the Deep, Stiff Clay Deposits in the Oakland Area," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 12/93-11/94; $48,513; Principal Investigator.

"Effects of Frequency Content on Liquefaction", Bechtel Corporation, 9/91-3/94; $9,000; Co-Principal Investigator.

"Three-Dimensional Response Analysis of Cogswell Dam during the 1991 Sierra Madre and the 1989 Whittier Narrows Earthquake", California Strong Motion Instrumentation Program's Directed Research Project, 5/92-6/93; $23,498; Co-Principal Investigator.

"Analysis of the Response of Earth Structures Subjected to Earthquake Fault Rupture", 1992 Dames and Moore Award, 6/92-5/93; $10,000; Principal Investigator.

"Characteristics and Seismic Response of the Deep Old Bay Clay Deposits in the East San Francisco Bay Area", U.S. Geological Survey, National Earthquake Hazards Reduction Program, 5/92-4/93; $66,590; Co-Principal Investigator.

"NSF PYI Matching Funds", Golder Associates, Inc., 9/91-8/93; $30,000; Co-Principal Investigator.

"Damping Ratios of Cohesive Soils", Purdue Research Foundation - David Ross Grant, 9/91-8/93; $21,240; Principal Investigator.

"NSF PYI Matching Funds", Chevron Research and Technology Company, 9/91-12/92; $7,800; Principal Investigator.

"The Effects of Foundation Deformation on the Integrity of Landfill Bottom Liner Systems", U.S. Department of Education - Fellowship for National Needs Graduate Students, 9/91-8/94; $46,000; Co-Principal Investigator.

"Numerical Analysis of Base Rock Fault Rupture Propagation Through Overlying Cohesive Soils", Purdue Research Foundation - XL Summer Faculty Grant, 6/91-7/91; $5,000; Principal Investigator.

INVITED LECTURE PRESENTATIONS (in addition to uninvited conference papers)

“Sampling Methods for Tailings/Waste Storage Facilities,” Technical Short Course 2: Field and Laboratory Investigations for Waste Storage Facilities, virtual short course presented by TAILENG, 23 April 2025.

“Advancing Knowledge through Post-Extreme Event Reconnaissance,” Burmister Lecture, Columbia U., NY, March 25, 2025.

"Lessons Learned from Disasters," Keynote Lecture, GeoVirginia Conference, Smithfield, VA, March 18, 2025.

"Geotechnical Earthquake Engineering: A Virtual Short Course Series" presented 11 lectures in 3 modules of the 3-week short course held in Jan, Feb, and March, 2025.

"State concept interpretation of soil behavior in monotonic loading" and "Cyclic induced liquefaction and its assessment," Technical Short Course 4: Static and Cyclic Liquefaction of Mine Tailings, virtual short course presented by TAILENG, 21 & 23 October 2024.

"Characterization of the Liquefaction Hazard," Geotecnia Brazil, a philanthropic Brazilian Geotechnical Group, virtual lecture, September 30, 2024.

"Turning Disaster into Knowledge," Ardaman-Wissa Lecture, Univ. of Florida, Gainesville, FL, September 19, 2024.

"Tailings/waste storage facilities, geotechnical analysis, and modeling" and "Liquefaction Hazard," Technical Short Course 3: Geotechnical Analysis of Waste Storage Facilities, virtual short course presented by TAILENG, 9 & 11 September 2024.

"Site Characterization and Evaluation of Soil Liquefaction Effects," Tonkin + Taylor, LLC, Christchurch, NZ, August 19, 2024.

"Seismic Response of Tailings Storage Facilities," Technical Course: Fundamentals of Tailings Geotechnics, *Tailings 2024* Conference, Santiago, Chile, virtual short course sponsored by TAILENG, 6 June 2024.

"Static and Cyclic Liquefaction of Mine Tailings," presented 6 lectures and participated in 4 Panel Discussion Sessions in the TAILENG Brazil Technical Short Course, Belo Horizonte, Brazil, 27-29 May 2024.

"Geotechnical Earthquake Engineering: A Virtual Short Course Series" presented 10 lectures in 3 modules of the 3-week short course held in Feb, Mar, and April, 2024.

"Sampling Methods for Tailings/Waste Storage Facilities," Technical Short Course 2: Field and Laboratory Investigations for Waste Storage Facilities, virtual short course presented by TAILENG, 24 April 2024.

"Site Characterization and Evaluation of Soil Liquefaction Effects," 18th Kenneth L. Lee Lecture, The Queen Mary, Long Beach, CA April 17, 2024.

"Seismic Design Considerations for Tailings Dams" 20th Gerald A. Leonards Lecture, Purdue Univ., IN, 12 April 2024.

"Liquefaction Challenges: Site Characterization to Evaluate Liquefaction Effects," CalGeo Annual Conference, April 3-5, 2024.

"Soil Liquefaction Effects in Iskenderun and Golbasi in the 2023 Turkey Earthquake," I*nsights from the 2023 Kahramanmaras-Turkey Earthquakes* Seminar, ASCE Orange County Geo-Institute, Irvine, CA, 15 March 2024.

"Evaluation of Seismic Slope Stability," ASCE-GI San Diego Chapter, San Diego, CA, 13 March 2024.

"Seismic Performance of Tailings Storage Facilities," Tailings Geotechnics: Recent advances and perspectives short course delivered at the Tailings and Mine Waste 2023 Conference, Vancouver, Canada, 5 November 2023.

"State concept interpretation of soil behavior in monotonic loading" and "Cyclic induced liquefaction and its assessment," Technical Short Course 4: Static and Cyclic Liquefaction of Mine Tailings, virtual short course presented by TAILENG, 23 & 25 October 2023.

"Tailings/waste storage facilities, geotechnical analysis, and modeling" and "Liquefaction Hazard," Technical Short Course 3: Geotechnical Analysis of Waste Storage Facilities, virtual short course presented by TAILENG, 11 & 13 September 2023.

"Turning Disaster into Knowledge," Dept. of Civil and Natural Resources Engineering Seminar, Christchurch, NZ, 24 AUG 2023.

"Seismic Slope Stability," ENGEO Lecture Series, July 18, 2023.

"Seismic Response of Tailings Storage Facilities," Technical Course: Fundamentals of Tailings Geotechnics, *Tailings 2023* Conference, Santiago, Chile, virtual short course sponsored by TAILENG, 12 June 2023.

"Performance-Based Seismic Assessment of Slope Systems," 37th Annual Spring Seminar - Dr. Steven L. Kramer Honorary Technical Symposium, ASCE Seattle Section Geotechnical Group & Seattle Geo-Institute Chapter and Univ. of Washington Department of Civil & Environmental Engineering, University of Washington, Seattle, May 13, 2023.

"Liquefaction Effects of Silty Soil," Symposium in Honor of Ricardo Dobry, Rensselaer Polytechnic Institute, Troy, NY, May 9, 2023.

"Geotechnical Earthquake Engineering Reconnaissance," III International Congress on Geotechnical Engineering, Mining and Seismicity, GEOGROUP UNI, National Univ. of Engineering, Lima, Peru, 4 May 2023.

"Sampling Methods for Tailings/Waste Storage Facilities," Technical Short Course 2: Field and Laboratory Investigations for Waste Storage Facilities, virtual short course presented by TAILENG, 26 April 2023.

"Evaluating Liquefaction Effects," ENGEO Lecture Series, April 24, 2023.

"Major Contributions of Earthquake Reconnaissance: Geotechnical Engineering Impacts," Keynote lecture at the Earthquake Engineering Research Institute 2023 Annual Meeting, San Francisco, CA, 12 April 2023.

"Turning Disaster into Knowledge," Structural Engineering Dept. Seminar, UC San Diego, CA, 27 FEB 2023.

"Performance-Based Seismic Assessment of Slope Systems," Geoseismic Issues for Bridges Subcommittee AKB50/AKG70, 2023 Transportation Research Board Meeting, Washington D.C., 11 January 2023.

"Liquefaction of Silt" and "Seismic Site Response," Invited lectures in Simposio Internacional de Ingenieria Geotecnica Sismica, virtual short course, Societies of Earthquake Engineering and Geotechnical Engineering, Chile, 30 November 2022.

"State concept interpretation of soil behavior in monotonic loading" and "Cyclic induced liquefaction and its assessment," Technical Short Course 4: Static and Cyclic Liquefaction of Mine Tailings, virtual short course presented by TAILENG, 24 & 26 October 2022.

"Overview of CSSM and state concept for liquefaction analysis," and "Cyclic liquefaction and its assessment," Invited lectures at US Society of Dams Workshop on the Static and Dynamic Liquefaction Assessment of Dams, Denver, CO, 6 October 2022.

"New Directions in Earthquake Engineering: Earthquake Ground Motions and Site Effects," Invited Keynote Lecture, 5th International Conference on Earthquake Engineering and Disaster Mitigation, virtual presentation, Yogyakarta, Indonesia, 28 September 2022.

"Modeling of Tailings/Waste Storage Facilities" and "Liquefaction Hazard," Technical Short Course 3: Geotechnical Analysis of Waste Storage Facilities, virtual short course presented by TAILENG, 19 & 21 September 2022.

"Static and Cyclic Liquefaction of Mine Tailings," presented 6 Lectures and participated in 5 Panel Discussion Sessions in the TAILENG South African Technical Short Course, Johannesburg, South Africa, 15-17 August 2022.

"Performance-Based Seismic Assessment of Slope Systems," Keynote Lecture, 4th International Performance-Based Design (PBD-IV) Conference, Beijing, China, Hybrid Mode, 15-17 July 2022.

"Seismic Response of Tailings Storage Facilities," Technical Course: Fundamentals of Tailings Geotechnics, *Tailings 2022* Conference, Santiago, Chile, virtual short course sponsored by TAILENG, 5 July 2022.

"Selection of the Seismic Coefficient in Assessing Seismic Slope Stability," 1st Webinar Series of Geotechnical Earthquake Engineering (GEE), Indian Institute of Technology, Roorkee, India, supported by TC203 of ISSMGE, 11 May 2022.

"Sampling Methods for Tailings/Waste Storage Facilities," Technical Short Course 2: Field and Laboratory Investigations for Waste Storage Facilities, virtual short course presented by TAILENG, 18 May 2022.

"Evaluating the Effects of Liquefaction," 2022 H. Bolton Seed Medal Lecture, Geo-Congress 2022, ASCE, Charlotte, NC, 20 March 2022.

"Tailings Storage Facilities System Response Considerations," TC221 Tailings and Mine Waste Webinar, Inter. Soc. of Soil Mechanics and Geotechnical Engineering, 20 January 2022.

"Modeling of Tailings/Waste Storage Facilities" and "Liquefaction Hazard," Technical Short Course 4: Static and Cyclic Liquefaction of Mine Tailings, virtual short course presented by TAILENG, 6 & 7 December 2021.

"Selection of the Seismic Coefficient in Assessing Seismic Slope Stability," CalGeo Webinar, 3 November 2021.

"Soil Liquefaction Effects on Buildings," Keynote Lecture, 6th International Conference on Earthquake Engineering and Seismology, Gebze, Turkey via zoom, 13 October 2021,

"Effects of Surface Fault Displacement on Engineered Systems," Special Organized Session, Current Status and Future Perspectives of Effects of Surface Fault Displacement on Critical Infrastructure, 17th World Conference on Earthquake Engineering, 2 October 2021, virtual session O02B09 with invited speakers.

"Modeling of Tailings/Waste Storage Facilities" and "Liquefaction Hazard," Technical Short Course 3: Geotechnical Analysis of Waste Storage Facilities, virtual short course presented by TAILENG, 27 & 29 September 2021.

"Seismic Response of Tailings Storage Facilities," Technical Course 1: Fundamentals of Tailings Geotechnics, *Tailings 2021* Conference, Santiago, Chile, virtual short course sponsored by TAILENG, 26 August 2021.

"Importance of Near-Surface Geotechnical Response on Earthquake Ground Motions," PEER International Pacific Rim Forum, web-based forum hosted at UC Berkeley, 16 June 2021.

"Details Matter," webinar presented at the 100th Anniversary of the Birth of Gerald A. Leonards event hosted by the Purdue Geotechnical Society, 29 April 2021.

"Seismic Performance of Silty Soil Sites," webinar presented to the California Geotechnical Engineering Association (CalGeo), 3 December 2020.

"GEER Deployment Example 1: Chile Earthquake and Tsunami," presented in *GEER Reconnaissance Team Deployment: Pre, During and Post Event* webinar, Geotechnical Extreme Events Reconnaissance (GEER) Association, 5 November 2020.

"Emerging Professionals Webinar: Challenges in Earthquake Engineering," webinar presented to the young engineering professionals of The California Geotechnical Engineering Association (CalGeo), 22 October 2020.

"Evaluating Earthquake-Induced Ground Failure," 8 lectures for the ConeTec Training Days 2020 event, including near-fault shaking, soft soil seismic response, site investigation, and liquefaction triggering, and effects, Vancouver, B.C., 6 January 2020.

"Estimating Liquefaction-Induced Building Settlement," First Geotechnical Engineering Distinguished Seminar, Univ. of Nevada, Reno, NV, 22 November 2019.

"Estimating Liquefaction-Induced Building Settlement," The Osterberg Lecture, Northwestern, Chicago, IL, 23 October 2019.

"Simplified Seismic Slope Displacement Procedures," Kenji Ishihara Colloquium Series on Earthquake Geotechnical Engineering: Seismic Lateral Displacements, EERI San Diego Chapter, San Diego, CA, 23 August 2019.

"Geotechnical Earthquake Engineering," 19 lectures as part of a special short course in Bogota, Colombia, 29-31 July 2019.

"Geotechnical Earthquake Engineering," 18 lectures as part of a special short course in Santiago, Chile, 25-27 July 2019.

"Earthquake Geotechnical Engineering Reconnaissance Methods and Advances," Theme Lecture, VII International Conference on Earthquake Geotechnical Engineering, Rome, Italy, 18 June 2019.

"Updated Ishihara Lecture on Simplified Procedure for Estimating Liquefaction-Induced Building Settlement," New Zealand Geotechnical Society, Christchurch, New Zealand, 23 May 2019.

"Turning Disaster into Knowledge," EBMUD's Distinguished Speaker Lecture, Oakland, CA, 18 March 2019.

"Simplified Procedure for Estimating Liquefaction-Induced Building Settlement," Vancouver Geotechnical Society, Vancouver, British Columbia, Canada, 7 March 2019.

"Performance-Based Probabilistic Seismic Slope Displacement Procedure," EERI 2019Annual Meeting: Reaching Resilience Faster by Working Together, Vancouver, Canada, 6 March 2019.

"Geotechnical Earthquake Engineering Accomplishments & Challenges," 2019 PEER Annual Meeting: Seismic Resilience 25 Years after Northridge, UCLA, Los Angeles, CA, 17 January 2019.

"Simplified Procedure for Estimating Liquefaction-Induced Building Settlement," CalGeo, Nor Cal Regional Dinner Meeting, Sacramento, CA, 25 October 2018.

"Simplified Procedure for Estimating Liquefaction-Induced Building Settlement," CalGeo, SoCal Regional Dinner Meeting, Burbank, CA, 9 October 2018.

"Assessing Surface Fault Rupture Deformation," Plenary Session Speaker, Southern California Earthquake Center Annual Meeting, Palm Springs, CA, 11 September 2018.

"Simplified Evaluation of Liquefaction-Induced Building Settlements," Kenji Ishihara Colloquium Series on Earthquake Geotechnical Engineering: Seismic Settlements, EERI San Diego Chapter, San Diego, CA, 24 August 2018.

"Geotechnical Earthquake Engineering with Applications to Mining Projects," 21 lectures as part of a special short course organized by BERKIL, Lima, Peru, 23-27 July 2018.

"Seismic Performance of Earth Structures," Colegio de Ingenieros del Peru Consejo Nacional, Lima, Peru, 24 July 2018.

"Geotechnical Earthquake Engineering," 20 lectures as part of a special short course organized by GeoSismica, Guayaquil, Ecuador, 16-20 July 2018.

"Advancing Understanding through Post-Extreme Event Reconnaissance," Plenary Session Speaker, Researchers Meeting, 43rd Annual Natural Hazards Research and Applications Workshop, Broomfield, CO, 11-12 July 2018.

"Simplified Evaluation of Liquefaction-Induced Building Settlements," Theme Lecture, ASCE Geotechnical Earthquake and Soil Dynamics Conference, Austin, TX, June 12, 2018.

"Simplified Procedure for Estimating Liquefaction-Induced Building Settlement," SFGI-UC Berkeley 36th Annual Geosystems Distinguished Lecture Series, Berkeley, CA, May 4, 2018.

"Surface Fault Rupture Design Considerations," Univ. of Washington, Seattle, WA, March 29, 2018.

"Seismic Response of Silty Soil Sites," Joint Geo-Institute and EERI Meeting, Sacramento, Oct. 26, 2017.

"Turning Disaster into Knowledge," 25th Buchanan Lecture, Texas A&M, College Station, Texas, Oct. 13, 2017.

"Simplified Procedure for Estimating Liquefaction-Induced Building Settlement," 6th Ishihara Honours Lecture, 19th International Conference on Soil Mechanics and Geotechnical Engineering, Seoul, South Korea, Sept. 19, 2017.

"Improving Our Ability to Learn from Earthquakes," TC-203 Earthquake Geotechnical Engineering & Associated Problems Workshop, 19th International Conf. on Soil Mechanics and Geotechnical Engineering, Seoul, South Korea, Sept. 20, 2017.

"Key Trends in Assessing Liquefaction-Induced Building Settlement," 3rd Inter. Conf. on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), Vancouver, Canada, July 18, 2017.

"Simplified Procedures for Estimating Seismic Slope Displacement," USACE Seismic Analysis of Embankments Short Course, 18 May 2017.

"Building near Faults," ASCE Redwood Empire Branch Luncheon, Santa Rosa, CA, 11 May 2017.

"Evaluating Seismic Slope Stability," Tonkin + Taylor, Ltd., Auckland, NZ, 12 April 2017.

"Insights through Dynamic Analysis of Structures at Liquefied Sites," 2nd Workshop on Geotechnical Earthquake Engineering - Dealing with the Consequences of Liquefaction - Honoring the lifetime achievements and contributions of Prof. Kenji Ishihara, San Diego, CA, 30 March 2017.

"Liquefaction Effects on Buildings and Facilities: Lessons from New Zealand," EERI NYNE – GEER Mini-Symposium and Panel Discussion, New York City, 2 February 2017.

"*GEERing Up*: Building a Disaster Reconnaissance Disciplinary Community," NHERI RAPID Facility Community Workshop: Identifying Data Gathering Opportunities and Facility User Needs, Univ. of Washington, Seattle, WA, January 26-27, 2017.

"GEER: Turning Disaster into Knowledge," Grupo Grana y Montero, Lima, Peru, 16 January 2017.

"Seismic Hazard Assessment," "Earthquake Ground Motions," "Dynamic Soil Properties," "Soil Liquefaction Mechanisms and Concepts," "Seismic Performance of Earth Dams during Recent Earthquakes," "Liquefaction Assessment Procedures," " Seismic Evaluation Procedures of Earth Structures," and "Simplified Seismic Slope Displacement Procedures," Curso International Ingeniera Geotecnica y Sismica con Aplicaciones a Proyectos Mineros, Lima, Peru, 16-18 January 2017.

"Engineering Implementation of the Results of a Fault Displacement Hazards Analysis," Fault Displacement Hazards Analysis Workshop, USGS, Menlo Park, CA, 9 December 2016.

"Turning Disaster into Knowledge," Humboldt State University, Arcata, CA, 17 November 2016.

"Building near Faults," ASCE San Francisco Section North Coast Branch Luncheon, Eureka, CA, 17 November 2016.

"Turning Disaster into Knowledge," Plenary Lecture, 1st International Symposium on Soil Dynamics and Geotechnical Sustainability (1st ISSDGS), Hong Kong University of Science and Technology (HKUST), Hong Kong, China, 8 August 2016.

"Simplified Seismic Slope Displacement Procedure for Subduction Zone Earthquakes," Symposium in Honor of I.M. Idriss, UC Davis, 17 June 2016.

"Simplified Procedures for Estimating Seismic Slope Displacement," USACE Seismic Design of Earth Embankments Short Course, 26 May 2016.

"Investigating Liquefaction Effects in Christchurch, New Zealand," Rensselaer Polytechnic Institute, Troy, NY, 22 April 2016.

"Turning Disaster into Knowledge," Haley & Aldrich Distinguished Lecture in Geotechnical Engineering, Univ. of Massachusetts, Amherst, 21 April 2016.

"Multi-Story Building Performance at Liquefied Sites," 2016 EERI Annual Meeting, San Francisco, CA, 7 April 2016.

"Insights from the Seismic Performance of Earth Dams," 2016 Association of State Dam Safety Officials (ASDSO) West Regional Conference, Sacramento, CA, 11 March 2016.

"Investigating Liquefaction Effects in Christchurch, New Zealand," EERI ND Chapter Lecture, Univ. of Notre Dame, IN, 26 February 2016.

"Engineering Response of Structures to Surface Fault Rupture," ASCE GI-SEI Congress, Phoenix, AZ, 17 February 2016.

"Liquefaction Effects on Structures," ASCE GI-SEI Congress, Phoenix, AZ, 16 February 2016.

"Liquefaction Assessments in the Central Business District of Christchurch, New Zealand," Invited Keynote Lecture, 6th International Conference on Earthquake Geotechnical Engineering, Christchurch, NZ, 4 November, 2015.

"Simplified Procedures for Estimating Seismic Slope Displacement," New Zealand Geotechnical Society, Wellington and Canterbury Branch Presentations, 17 June 2015, Wellington, NZ, and 18 June 2015, Christchurch, NZ.

"Building near Faults: Engineering Mitigation of Surface Fault Rupture," Invited Keynote Lecture, 3rd IACEGE International Conference on Geotechnical and Earthquake Engineering (IACGE2015) and the 28th ICTPA Annual Conference (ICTPA28) Technical Program, Irvine, CA, May 15, 2015.

"Investigating Liquefaction Effects in Christchurch, New Zealand," Sowers Lecture, 18th Annual Sowers Symposium, Geo-Institute, Georgia Chapter & Georgia Tech, Atlanta, May 5, 2015

"Liquefaction Issues," and "Seismic Slope Stability Analysis," CalGeo Annual Conference, Carmel, CA, April 24 & 25, 2015.

"Turning Disaster into Knowledge," Keynote Lecture, 12th Australia New Zealand Conference on Geomechanics (ANZ 2015), Wellington, New Zealand, February 25, 2015.

"Key Insights from the Seismic Performance of Earth Structures during Recent Earthquakes," and "Simplified Seismic Stability Evaluation Procedures for Earth Structures," Seismic Design of Tailings Dams, 2015 SME Annual Conference and Expo/117th National Western Mining Conference, Denver, CO, February 15, 2015.

"Liquefaction Concepts," ENGEO Professional Seminar, San Ramon, January 29, 2015 and Christchurch, February 25, 2015.

"Engineering Mitigation of Surface Fault Rupture," Basin and Range Province Seismic Hazards Summit III, Salt Lake City, Utah, January 15, 2015.

"Turning Disaster into Knowledge," Univ. of California, Davis, Geotechnical Engineering Seminar, December 4, 2014.

"Turning Disaster into Knowledge," Mueser Rutledge Lecture, American Society of Civil Engineers Metropolitan, Section, New York, November 13, 2014.

"Dynamic Properties," "Seismic Hazard," "Static Stability Analysis," and "Seismic Stability Evaluation," Civil and Geotechnical Design of Heap Leach Pads, Heap Leach Solutions 2014 Conference, November 10, 2014.

"GEER Post-Earthquake Reconnaissance," "Earthquake Ground Motions," "Soil Liquefaction," and "Seismic Slope Displacement Analysis," Recent Advances in Geotechnical Earthquake Engineering, Peruvian Geotechnical Society Lecture, Lima, Peru, November 9, 2014.

"Importance of Post-Extreme Event Reconnaissance," "Reconnaissance at Liquefaction-Induced Ground Failure Sites," and "Data Integration and Reporting," GEER Post-Disaster Training Workshop, Univ. of Washington, Seattle, November 7, 2014.

"Turning Disaster into Knowledge," Georgia Tech, Atlanta, September 19, 2014.

"Geotechnical Engineering Aspects of the M6 South Napa Earthquake," EERI-PEER Reconnaissance Briefing, UC Berkeley, September 15, 2014.

"Turning Disaster into Knowledge," Invited Keynote Lecture, 12th International Symposium on Geo-disaster Reduction,

Fullerton, CA, September 6, 2014.

"Simplified Procedures for Estimating Earthquake-Induced Slope Displacement," URS Corporation Webinar, August 14, 2014.

"Performance of Office Building Foundations in Liquefied Ground," 10th U.S. National Conference on Earthquake Engineering, EERI, July 23, 2014.

"The Canterbury Earthquake Sequence: Lessons for Response and Recovery – Post-Earthquake Building Management - Recovery Phase," 10th U.S. National Conference on Earthquake Engineering, EERI, July 23, 2014.

"Turning Disaster into Knowledge," American Institute of Architects - New York Design for Risk & Reconstruction Committee and Earthquake Engineering Research Institute -Northeast Chapter, DfRR Series Lecture, New York, NY, May 22, 2014.

"CPT-Based Liquefaction Assessments in Christchurch, New Zealand," MRCE, New York, NY, May 22, 2014.

"CPT-Based Liquefaction Assessments in Christchurch, New Zealand," Keynote lecture presented at CPT'14: Third International Symposium on Cone Penetration Testing, Las Vegas, NV, May 14, 2014.

"Liquefaction Effects on Structures," Updated 2013 Ralph B. Peck Award Lecture, presented at the 18th Great Lakes Geotechnical and Geoenvironmental Conference & the 2014 Chicago Geotechnical Lecture Series, Geotechnical Earthquake Engineering, Chicago, IL, May 2, 2014

"Seismic Performance of Earth Dams during Recent Earthquakes," U.S. Society on Dams Annual Conference, San Francisco, CA, 8-10 April, 2014.

"Liquefaction Effects on Structures," New Zealand Society of Earthquake Engineering Annual Meeting, Auckland, NZ, 21-23 March 2014.

"Liquefaction Effects in the Central Business District of Christchurch," New Zealand-Japan Workshop on Soil Liquefaction during Recent Large-Scale Earthquakes," Univ. of Auckland, NZ, 2-3 December 2013.

"Seismic Performance Considerations for Dams and Reservoirs," New Zealand Society of Large Dams and Australian Committee on Large Dams Annual Conference: Multiple Use of Dams and Reservoirs, 14-15 November 2013.

"Seismic Evaluation Procedures of Earth Dams," New Zealand Society of Large Dams Conference Workshop: Advances in Dam Engineering, 13 Nov. 2013.

"Implications of Recent Advances in Liquefaction for Dams," New Zealand Society of Large Dams Conference Workshop: Advances in Dam Engineering, 13 Nov. 2013.

"Geotechnical Lessons Learned from Earthquakes," Geotechnical Society lecture at U.C. Berkeley, CA, Sept. 25, 2013.

"Liquefaction Effects on Structures," Ralph B. Peck Award Lecture, presented at ZETAS Lecture Series, Istanbul, Turkey, June 20, 2013.

"Liquefaction Effects on Buildings in the Central Business District of Christchurch," Invited Lecture at the International Conference on Earthquake Geotechnical Engineering, Istanbul, Turkey, June 18, 2013.

"Building near Faults," William B. Joyner Memorial Lecture, presented at the Surface Fault Rupture: New Mitigation Concepts and Political Challenges Workshop, AEG-ASCE-EERI, Fountain Valley, CA, May 10, 2013.

"Geotechnical Lessons Learned from Earthquakes," State of the Art and Practice Lecture, Seventh International Conference on Case Histories in Geotechnical Engineering, Chicago, IL, May 4, 2013.

"Simplified Seismic Slope Displacement Procedures," New Zealand Geotechnical Society Seminar, Auckland, New Zealand, April 17, 2013.

"Liquefaction Effects on Structures," Ralph B. Peck Award Lecture, presented at Geo-Congress 2013: Stability and Performance of Slopes and Embankments III, San Diego, CA, March 4, 2013.

"Building near Faults," William B. Joyner Memorial Lecture, presented at the Seattle ASCE Geo-Institute Meeting, Seattle, WA, Jan. 24, 2013.

"Building near Faults," William B. Joyner Memorial Lecture, presented at U.C. Berkeley, CA, Jan. 23, 2013.

"Building near Faults," William B. Joyner Memorial Lecture, presented at Brigham Young Univ., Provo, UT Jan. 17, 2013.

"Building near Faults," William B. Joyner Memorial Lecture, presented at the EERI Salt Lake Chapter, Univ. of Utah, Salt Lake City, UT, Jan. 16, 2013.

"Building near Faults," William B. Joyner Memorial Lecture, presented at the Univ. of Nevada, Reno, EERI Student Branch, Reno, NV, Nov. 29, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, presented at the Univ. of Notre Dame, IN, Nov. 16, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, presented at Los Angeles sections of the ASCE Geo-Institute and Assoc. of Engineering Geologists (AEG), Los Angeles, CA, Nov. 14, 2012.

"Liquefaction-Induced Building Movements," Dept. of Civil & Environ. Engineering, UCLA, Los Angeles, CA, Nov. 14, 2012.

"Liquefaction-Induced Building Movements," Dept. of Civil Engineering, Univ. of Auckland, Auckland, NZ, Nov. 1, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, NZGS Meeting, Auckland, New Zealand, Oct. 30, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, presented at NZGS Canterbury Area Meeting, Christchurch, New Zealand, Oct. 23, 2012.

"Liquefaction-Induced Building Movements," Dept. of Civil Engineering & Natural Resources CEE, Univ. of Canterbury, Christchurch, NZ, Oct. 12, 2012.

"Liquefaction-Induced Building Movements," GNS Science Headquarters, Lower Hutt, New Zealand, Oct. 10, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, presented at GNS Science Headquarters, Lower Hutt, New Zealand, Oct. 9, 2012.

"Simplified Seismic Slope Displacement Procedures," Dept. of Civil Engineering & Natural Resources CEE, Univ. of Canterbury, Christchurch, NZ, Sept. 28, 2012.

"Liquefaction-Induced Building Movements," MRCE, New York, NY, August 14, 2012.

"Liquefaction-Induced Building Movements," Georgia Institute of Technology, Geosystems Seminar Series, Atlanta, GA, July 19, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, presented at Georgia Institute of Technology, EERI Student Chapter Seminar Series, Atlanta, GA, July 19, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, presented at the U.S. Geological Survey Seminar Series, Menlo Park, CA, July 18, 2012.

"Challenges in Modeling Earthquake Effects," Keynote Lecture, 2012 Joint Conference of the Engineering Mechanics Institute and the 11th ASCE Joint Specialty Conference on Probabilistic Mechanics and Structural Reliability, Univ. of Notre Dame, June 18, 2012.

"Liquefaction-Induced Building Movements," Keynote Lecture, Second International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Taormina, Italy, May 28, 2012.

"Liquefaction Effects in the Central Business District of Christchurch," Second International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Taormina, Italy, May 30, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, Seismological Society of America Annual Meeting, San Diego, CA, April 18, 2012.

"Building near Faults," William B. Joyner Memorial Lecture, Earthquake Engineering Research Institute Annual Meeting, Memphis, TN, April 13, 2012.

"Liquefaction-Induced Building Movements," Kleinfelder Professional Development and Training Seminar, Denver, CO, Feb. 25, 2012.

"Simplified Seismic Slope Displacement Procedures," Dept. of CEE, Univ. of Colorado, Boulder, CO, Feb. 24, 2012.

"Seismic Response and Performance of Landfill Systems," Landfill Barrier Technology Workshop, Department of Ecology, State of Washington, Richland, WA, Feb. 1, 2012.

"Near-Fault Velocity Pulse Motions," Diablo Canyon Nuclear Power Plant SSHAC Workshop, PG&E, Dec. 1, 2011.

"Earthquake Surface Fault Rupture Design Considerations," Kleinfelder Technical Web Seminar, Nov. 17, 2011.

"Earthquake-Induced Ground and Building Movements," Geotechnical Engineering Seminar, University of California, Davis, November 10, 2011.

"Soil Liquefaction in the Christchurch Area during Recent Earthquakes," 2011 COSMOS Annual Meeting and Technical Session, Emeryville, CA, Nov. 4, 2011.

"Overview of GEER," "Documenting the Effects of the 2010 Chile Earthquake," and "Capturing the Effects of Ground Deformation on Structures," Post-Earthquake Reconnaissance Workshop, ASCE San Francisco Geo-Institute & GEER, October 21, 2011.

"Simplified PBEE Procedures for Estimating Seismic Slope Displacements," PEER Annual Meeting, Berkeley, October 1, 2011.

"Seismic Performance of Earth Dams during the 2011 Tohoku Earthquake," Department of Water Resources Seminar, Sacramento, June 23, 2011.

"Earthquake-Induced Ground and Building Movements," 29th Annual Geo-Engineering Distinguished Lecture Series, San Francisco Geo-Institute and the University of California, Berkeley, May 6, 2011.

"An Overview of Earthquake Ground Motions," and "Liquefaction and its Effects on Structures," "Schnabel University" Northern Regional Workshop, Schnabel Engineering, Potomac, MD, March 19, 2011 (remote live webcast).

"Industry-Academia Collaboration in Geotechnical Engineering," EERI Annual Meeting, San Diego, February 11, 2011.

"Some Observations of the Effects of the 2010 Chile Earthquake," MRCE, New York, February 7, 2011.

"Effects of Liquefaction on Buildings and Industrial Facilities," 5th International Conference on Earthquake Geotechnical Engineering, Santiago, Chile, January 10, 2011.

"Geotechnical Aspects of the M=8.8 2010 Chile Earthquake," San Francisco ASCE Geo-Institute and Association of Engineering Geologists Annual Meeting, Oakland, CA, November 18, 2010.

"Some Observations of the Effects of the 2010 Chile Earthquake," San Francisco Bay Area Society of American Military Engineers Meeting, Alameda, CA, November 18, 2010.

"Liquefaction-Induced Movements of Buildings with Shallow Foundations," Univ. of Notre Dame, South Bend, IN, October 24, 2010.

"Seismic Displacement Design of Earth Retaining Structures," Earth Retention Conference 3, Plenary Session, ASCE Geo-Institute, Bellvue, Washington, August 3, 2010.

"Geotechnical and Lifelines Directions," Closing Plenary Session, 9th US National and 10th Canadian Conference on Earthquake Engineering, EERI & CAEE, Toronto, Canada, July 29, 2010.

"Geotechnical Aspects of the M=8.8 2010 Chile Earthquake," The Haiti and Chile Earthquakes of 2010Session, 9th US National and 10th Canadian Conference on Earthquake Engineering, EERI & CAEE, Toronto, Canada, July 28, 2010.

"GEER Overview & Accomplishments," Geoengineering Extreme Events Reconnaissance Session I at the Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, May 28, 2010.

"2010 Chile Earthquake: Introduction & Effects on Liquefaction on Buildings and Industrial Facilities," Geoengineering Extreme Events Reconnaissance Session III at the Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, May 26, 2010.

"Liquefaction-Induced Movements of Buildings with Shallow Foundations," Invited lecture at the Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, May 26, 2010.

"A Geotechnical Perspective of the M=8.8 2010 Chile Earthquake," EERI San Francisco Branch Meeting on Lessons Learned from the Chile Earthquake Regarding Resilience, Oakland, CA, May 19, 2010.

"Geotechnical Aspects of the M = 8.8 February 27, 2010 Chile Earthquake," EERI/PEER/GEER Special Briefing on the 2010 Chile Earthquake, Berkeley, CA, March 30, 2010.

"Designing Buildings to Accommodate Earthquake Surface Fault Rupture," Special Session at the ATC & SEI 2009 Conference on Improving the Seismic Performance of Existing and Other Structures, Dec. 10, 2009.

"Cyclic Pore Pressure Generation," "Liquefaction of Soils with Fines," and "Ground and Foundation Displacement Evaluations," San Francisco ASCE Geotechnical Group Seminar on Recent Advances and Current Issues in Soil Liquefaction Engineering, Oakland, CA, Oct. 27. 2009.

"Earthquake Engineering Design near Active Faults," Univ. of Michigan, Ann Arbor, MI, Oct. 15, 2009

"Geo-Hazards," Seismic Hazards and Site Selection, SEISMIC EVENT: Designing for Earthquakes, AIA Santa Clara Valley, Stanford University, Palo Alto, CA, Oct. 2, 2009

"Engineering Seismicity and Design Rock Ground Motions," and "Simplified Seismic Site Response Procedures," 2009 AEG Annual Conference Short Course, Lake Tahoe, CA, Sept. 26, 2009

"Learning from Case Histories," Academics-Practitioners Discussion Session 4, International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, IS-Tokyo 2009, June 16, 2009

"Distribution of Surface Fault Rupture," Surface Fault Displacement Hazard (SFDH) Workshop, USGS, Calif. Geol. Survey, and PEER May 26, 2009

"Earthquake Surface Fault Rupture Design Considerations," Sixth International Conference on Urban Earthquake Engineering, Center for Urban Earthquake Engineering, Tokyo, Japan, March 4, 2009.

"Mitigation of the Surface Fault Rupture Hazard," 2009 AEG Shlemon Specialty Conference - Investigation, Risk Analysis, and Mitigation of Surface Faulting, Palm Desert, CA, Feb. 19, 2009.

"Simplified Seismic Slope Displacement Procedures," ASCE San Diego Geotechnical Engrg. Section, CA, Feb. 18, 2009.

"Dams and Embankments," "Undrained and Drained Soil Response," and "Excavations," PLAXIS Course, University of California, Berkeley Jan. 14-15, 2009

"Simplified Procedures for Estimating Earthquake-Induced Deviatoric Slope Displacements," Keynote Lecture, Calif. Geotechnical Engineering Association Annual Conference, Indian Wells, CA, May 2, 2008.

"Simplified Seismic Slope Displacement Procedures," ASCE Los Angeles Geotechnical Engrg. Section, CA, Nov. 15, 2007.

"Mitigation of the Surface Fault Rupture Hazard," UCLA, Los Angeles, CA, Nov. 15, 2007.

"Mitigation of the Surface Fault Rupture Hazard," Univ. of Notre Dame, South Bend, IN, Nov. 13, 2007.

"Mitigation of the Surface Fault Rupture Hazard," Purdue Univ., W. Lafayette, IN, Nov. 12, 2007.

"Simplified Seismic Slope Displacement Procedures," Vancouver Geotechnical Society, Vancouver, Canada, Nov. 1, 2007.

"Liquefaction of Fine-Grained Soils," University of British Columbia, Canada, Nov. 1, 2007.

"Mitigation of the Surface Fault Rupture Hazard," Assoc. of Engineering Geologists & ASCE Seattle Section Joint Meeting, Seattle, WA, September 20, 2007.

"Design Ground Motions in the Near-Fault Region," University of Washington, WA, September 20, 2007.

"Developing design rock motions," "Design ground motions in the near-fault region," "Dynamic modulus and damping," "Pore pressure generation during cyclic loading," "Liquefaction evaluation of silts and clayey soils," and "Seismic slope instability and slope displacement procedures," Evaluation and Mitigation of Geotechnical Seismic Hazards Technical Short Course, Olympia, Washington, July 12-14, 2007.

"Simplified Seismic Slope Displacement Procedures," Invited Theme Lecture, 4th Inter. Conf. on Earthquake Geotechnical Engineering, Thessaloniki, Greece, June 26, 2007.

"Geotechnical Earthquake Engineering Considerations in the IBC 2006" and "Liquefaction Assessment Summary" in Recent Advances in Codes Workshop, 4th Inter. Conf. Earthquake Geotechnical Engineering, Thessaloniki, Greece, June 28, 2007.

"Design Ground Motions in the Near-Fault Region," Geosyntec Geoenvironmental Group Technical Meeting, Emeryville, CA, April 20, 2007.

"Simplified Procedures for Estimating Seismic Earth and Waste Fill Deviatoric Displacements," ASCE San Francisco Section, Berkeley, CA, February 22, 2007.

"Design Ground Motions Near Active Faults," Earthquake Geotechnical Engineering Workshop, University of Canterbury, Christchurch, New Zealand, Nov. 20, 2006.

"Performance of Solid-Waste Landfills," "Static Stability Analyses," "Earthquake Ground Motions Characteristics and Selection," "Dynamic Analyses of Waste Fills," and "Advanced Analyses," Static and Seismic Stability of Solid-Waste Landfills, Environment Short Course, Geosynthetics 2007, Washington D.C., Jan. 16, 2007.

"Design Ground Motions in the Near-Fault Region," University of Texas at Austin, TX, November 10, 2006.

"Design Ground Motions in the Near-Fault Region," University of Notre Dame, IN, October 27, 2006.

"Simplified Procedures for Estimating Seismic Earth and Waste Fill Deviatoric Displacements," GeoSyntec Consultants company-wide web conference lecture, given in Oakland, California and received in eight other offices, August 31, 2006.

"Observations of Surface Fault Rupture from the 1906 Earthquake in the Context of Current Practice," and "Mitigation of the Surface Fault Rupture Hazard," 100th Ann. EQ Conf. Comm. the 1906 San Francisco EQ, April 18 and 20, 2006.

"Combating Tectonic Forces: Building to Withstand Earthquake Ground Movements," Vice-Chancellor's Lectures at the University of Auckland, New Zealand, Nov. 9, 2005.

"Engineering to Accommodate Ground Deformation Associated with Surface Fault Rupture," 1st Greece-Japan Workshop: Seismic Design, Observation, and Retrofit of Foundations, National Technical University of Athens, Greece, Oct. 11, 2005.

"Deterministic estimation of rock motions for design purposes," "Dynamic modulus and damping," "Pore pressure generation during cyclic loading," "Liquefaction evaluation of silts and clayey soils," and "Methods of analysis for evaluation of seismic slope instability," Evaluation and Mitigation of Geotechnical Seismic Hazards, Univ. of Calif., Berkeley, Aug. 25-27, 2005.

"Performance-Based Design of Bridges Subject to Liquefaction and Lateral Spreading," PEER Annual Conference, Walnut Creek, CA, April 29, 2005.

"Deterministic estimation of rock motions for design purposes," "Dynamic modulus and damping," "Pore pressure generation during cyclic loading," "Liquefaction evaluation of silts and clayey soils," "Mitigation measures for surface fault rupture," and "Seismic performance of slopes and earth/waste structures and soil-structure interaction," Evaluation and Mitigation of Seismic Hazards, San Diego Assoc. of Geologists and ASCE short course, San Diego, April 8-9, 2005.

"Discrete Element Modeling of Particle Assemblages," and "Application of Discrete Element Modeling to Earthquake Fault," NSF Workshop on Micro-Mechanics, Cambridge University, England, March 20-23, 2005.

"Liquefaction of Fine-Grained Soils and Its Effects on Buildings," The Dongju Lee Memorial Lecture, Columbia University, New York, March 10, 2005.

"Performance of Solid-Waste Landfills," "Earthquake Ground Motions Characteristics and Selection," and "Dynamic Analyses of Waste Fills," Static and Seismic Stability of Solid-Waste Landfills, ASCE short course, GeoFrontiers, Austin, Jan. 25, 2005.

"Advancements in Seismic Slope Stability Evaluation Procedures," and "Earthquake Surface Fault Rupture," Pontificia Universidad Catolica Del Ecuador, Quito, Ecuador, July 16, 2004.

"Selection and Use of Strong Motion Data," "Influence of Soils on Ground Shaking Characteristics," "Dynamic Soil Properties," "Pore Pressure Generation During Cyclic Loading," "Liquefaction of Silts, Clayey Soils, and Gravels," "Seismic Performance of Slopes and Earth Structures," "Earthquake Surface Fault Rupture," and "Lessons From Recent Earthquakes," Ingenieria Sismica Geotecnica Curso Internacional, Guayaquil, Ecuador, July 12- 15, 2004.

"Building on the Fault Line," San Diego Association of Geologists and ASCE San Diego Section Joint Meeting, San Diego, CA, May 19, 2004.

"Developing Mitigation Measures for the Hazards Associated with Earthquake Surface Fault Rupture," ASCE Los Angeles Section, Los Angeles, CA, November 18, 2003.

"Earthquake Surface Fault Rupture Hazards and Mitigation," General Earthquake Committee Meeting, California Department of Transportation, Sacramento, CA, June 25, 2003.

"Developing Mitigation Measures for the Hazards Associated with Earthquake Surface Fault Rupture," ASCE San Francisco Section, Berkeley, CA, May 18, 2003.

"Lessons Learned from Recent Earthquakes in Turkey and Taiwan," "Evaluation and Modeling of Dynamic Soil Properties," "Seismic Site Response," and "Seismic Slope Stability and Deformation Analyses," Seismic Hazards Mapping

Act Practicing Engineers' Short Course, California Division of Mines and Geology, Berkeley, CA, August 8-10, 2002.

"Liquefaction of Fine Grain Soils and Its Effects on Structures," U.S.-Japan Seminar on Seismic Disaster Mitigation in Urban Area by Geotechnical Engineering, Anchorage, Alaska, June 26-27, 2002.

"Ground Deformation Resulting from Earthquakes," Corps of Engineers Short-Course, Virginia Tech, June 14, 2002.

"Liquefaction of Fine Grain Soils and Its Effects on Structures," ASCE San Francisco Section, Berkeley, CA, May 16, 2002.

"Seismic Slope Stability Evaluation Procedures," Recent Advances in Geotechnical Earthquake Engineering, ASCE Seattle Section Geotechnical Spring Seminar, Seattle, WA, April 20, 2002.

"Lessons Learned from Recent Earthquakes in Turkey and Taiwan," "Evaluation and Modeling of Dynamic Soil Properties," "Seismic Site Response," and "Seismic Slope Stability and Deformation Analyses," Seismic Hazards Mapping Act Practicing Engineers' Short Course, California Division of Mines and Geology, Berkeley, CA, August 2-4, 2001.

"Engineering Near Faults," ZETAS Technology Inc. Special Lecture Series, Istanbul, Turkey, June 22, 2001.

"Developing Mitigation Measures for the Hazards Associated with Earthquake Surface Fault Rupture," Seismic Fault-Induced Failures, Japan Society for the Promotion of Science, University of Tokyo, Japan, January 12, 2001.

"Lessons Learned from Recent Earthquakes in Turkey and Taiwan," "Evaluation and Modeling of Dynamic Soil Properties," "Seismic Site Response," and "Seismic Slope Stability and Deformation Analyses," Seismic Hazards Mapping Act Practicing Engineers' Short Course, California Division of Mines and Geology, Berkeley, CA, August 17-19, 2000.

"Ground Failure and Its Effects on Structures," GeoDenver 2000 Conference, American Society of Civil Engineers, Denver, CO, August 3-6, 2000.

"Effects of Soil Conditions on Ground Motion and Failure," DEPRM: Insaat Muhendisliginde Yeni Yaklasmilar ve Modern Teknolojiler, Bogazici University, Istanbul, Turkey, July 5, 2000.

"Issues in Earthquake Engineering," 3rd AIMOS Conference, Istanbul Technical University, Istanbul, Turkey, July 2, 2000.

"Near-Fault Seismic Site Effects and Soil Liquefaction," Sakarya University, Adapazari, Turkey, June 21, 2000.

"Soil Liquefaction and Ground Failure," American Society of Civil Engineers, Sacramento Section, Sacramento, CA, April 25, 2000.

"Near-Fault Seismic Site Effects," US-Japan Workshop on Near-Fault Ground Motions, Pacific Earthquake Engineering Research Center, San Francisco, CA, March 20, 2000.

"Seismic Deformations of Earth Structures," Waterways Experiment Station, U. S. Corps of Engineers, Vicksburg, MS, March 3, 2000.

"Ground Failure and Its Effect on Structures," American Society of Civil Engineers, San Francisco Geotechnical Engineering Section, Oakland, CA, February 24, 2000.

"Geotechnical Aspects of the 1999 Kocaeli, Turkey Earthquake," American Concrete Institute, November 1, 1999.

"Garbage In without Garbage Out – The Goal of Seismic Waste Fill Design," Alumni Faculty Seminar, University of California, Berkeley, April 29, 1999.

"Seismic Performance of Solid-Waste Landfills," University of Illinois, Chicago, Illinois, April 16, 1999.

"Attempts to Gain Insight by Seeing Soil as It Sees Itself," Georgia Institute of Technology, Atlanta, GA, March 16, 1999.

"Seismic Performance of Solid-Waste Landfills," American Society of Civil Engineers, Atlanta Geotechnical Engineering Section, Atlanta, GA, March 16, 1999.

"Fault Propagation Studies: Impact on Design and Regulations," PEER Scholar's Course, University of California, Berkeley, November 21-22, 1998.

"Evaluation and Modeling of Dynamic Soil Properties," "Seismic Site Response," and "Seismic Slope Stability and Deformation Analyses," Seismic Hazards Mapping Act Practicing Engineers' Short Course, California Division of Mines and Geology, Berkeley, CA, August 20-22, 1998.

"Seismic Design of Solid-Waste Landfills," several hours of lecture in American Society of Civil Engineers – sponsored short course, part of *Geotechnical Earthquake Engineering and Soil Dynamics III, ASCE,* Seattle, WA, August 7, 1998.

"Evaluation and Modeling of Dynamic Soil Properties," "Seismic Site Response," and "Seismic Slope Stability and Deformation Analyses," Seismic Hazards Mapping Act Practicing Engineers' Short Course, California Division of Mines and Geology, Los Angeles, CA, July 30 – August 1, 1998.

"Importance of Depth to Bedrock in Seismic Site Response," The 5th Caltrans Seismic Research Workshop, Session No. 2, Panel Discussion - Site Response Issues, Caltrans, Sacramento, CA, June 16, 1998.

"Earthquake Engineering: Toward Developing Design Strategies Before the Big One," Physics Research Conference, California Institute of Technology, Pasadena, CA, April 2, 1998.

"Seismic Response of Stiff Soil Sites During Recent California Earthquakes," Nonlinear Site Response Workshop, Southern Calif. Earthquake Center, Los Angeles, CA, January 29-30, 1998.

"Evaluation and Modeling of Dynamic Soil Properties," "Seismic Site Response," Seismic Slope Stability and Deformation Analyses," and "Seismic Performance of Structural Fills," Seismic Hazards Mapping Act Regulators' Short Course, California Division of Mines and Geology, Los Angeles, CA, January 22-24, 1998.

"Earthquake Engineering: Toward Developing Design Strategies Before the Big One," Ninth Annual David and Lucile Packard Fellowships Conference, Monterey, CA, September 4-6, 1997.

"Landfill Seismic Response Issues," and "Back-Analysis of Landfill Performance," California Sanitary Landfill Static and Dynamic Slope Stability Conference, ASCE/AEG/Calif. IWMB, Whittier, CA, March 27-28, 1997.

"Engineering Implications of Ground Motions from the Northridge Earthquake and Other Geotechnical Issues," The Seminar on Northridge Earthquake Disaster, The Chinese Society of Earthquake Engineering, Taipei, Taiwan, December 16, 1996.

"The Kobe Earthquake and Its Implications for Berkeley," The Berkeley Breakfast Club, August 23, 1996

"Seismic Stability Considerations for Solid Waste Fills," Geotechnical Group, San Francisco Section, ASCE, April 16, 1996.

"Other Geotechnical Issues: Fault Rupture, Waste Fills, and Slope Stability," North America - Japan Workshop on Geotechnical Aspects of the Kobe, Loma Prieta and Northridge Earthquakes, NSF, January 23, 1996.

"The January 17, 1995 Hyogo-Ken Nanbu (Kobe) Earthquake," Fresno Section, ASCE, June 15, 1995.

"Seismic Stability Procedures for Solid Waste Landfills," Geotechnical Group, Sacramento Section, ASCE, May 17, 1995.

"Site Amplification and Ground Failure," Seismographic Station Seminar Series, University of California at Berkeley, April 11, 1995.

"Geotechnical Earthquake Engineering," San Francisco School-District Center, Thurgood Marshall Academic High School, San Francisco, March 31, 1995.

“Geotechnical Aspects of the Kobe Earthquake," Geotechnical Group, Seattle Section, ASCE, March 23, 1995.

“The 1994 Northridge Earthquake: a Year and a Day Later," Geotechnical Group, Los Angeles Section, ASCE, January 18, 1995.

"Earthquake Hazards of the Hayward Fault: Geotechnical Issues", U.C. Berkeley Earthquake Research Affiliates Program Conference, January 4, 1995.

"Observations of the Seismic Performance of Waste Fills," Advances in Earthquake Engineering Practice, EERC, Berkeley, June 4, 1994.

"Dynamic Analyses of Waste Fills," Advances in Earthquake Engineering Practice, EERC, Berkeley, June 4, 1994.

"Seismic Stability and Performance of Earth Embankments," Advances in Earthquake Engineering Practice, EERC, Berkeley, June 3, 1994.

"Evaluation and Modelling of Dynamic Soil Properties," Advances in Earthquake Engineering Practice, EERC, Berkeley, June 1, 1994.

"Geotechnical Engineering II: Deep Soil Sites, 1994 Northridge Earthquake and Seismic Response of Waste Fills, " Advances in Earthquake Engineering Practice, EERC, Berkeley, May 31, 1994.

"1994 Northridge Earthquake," 416th Engineer Command FETDA Presidio Area Support Center Annual Conference, May 14, 1994.

"Geotechnical Aspects of the Northridge Earthquake," Geotechnical Group, San Francisco Section, ASCE, July 19, 1994.

"Technology and the Engineer: Academia's Role", Western Regional Younger Member Council, ASCE, San Francisco, March 19, 1994.

"Geotechnical Considerations of the 1994 Northridge Earthquake", Earthquake Engineering Research Center, March 10, 1994.

"Seismic Analysis of Solid Waste Landfills", NSF Workshop on Research Priorities for Seismic Design of Solid Waste Landfills, Los Angeles, CA, August 29, 1993.

"Developments in Geotechnical Earthquake Engineering", Spain-U.S. Joint Workshop on National Hazards, NSF Sponsored, Barcelona, Spain, June 9, 1993.

"Geotechnical Considerations in Earthquake Engineering", National Earthquake Training Conference, Jackson, Tennessee, November 10, 1992.

"Integration of Analysis and Construction Monitoring in a Braced Excavation Design," ASCE Illinois Geotechnical Engineering Meeting, Chicago, May 12, 1992.

"On the Response of Earth Dams Subjected to Earthquake Fault Rupture," University of California, Berkeley, February 25, 1992 and Purdue University, September 9, 1992.

"Practical Geotechnical Engineering with the Finite Element Method," Georgia Institute of Technology, December 21, 1989 and Purdue University, March 22, 1990.

"Behavior of Earth Dams in the 1989 Loma Prieta Earthquake", University of California at Berkeley, March 13, 1990.

PUBLICATIONS (over 450 research publications)

BOOKS

1. Bray, J.D. "Retaining Structures" and "Geotechnical Earthquake Engineering" Chapters 21 and 24, respectively, in The Civil Engineering Handbook, W. F. Chen, Editor-in-Chief, CRC Press, Inc., Boca Raton, Florida, pp. 803-816 and pp. 868-882, 1995.

2. Bray, J.D. "Retaining Structures" and "Geotechnical Earthquake Engineering" Chapters 22 and 25, respectively, in The Civil Engineering Handbook, 2nd Edition, W. F. Chen and J.Y.R. Liew, Editors-in-Chief, CRC Press, Inc., Boca Raton, Florida, pp. 22-1 to 22-14 and pp. 25-1 to 25-15, 2003.

3. Bray, J.D. "Chapter 14: Simplified Seismic Slope Displacement Procedures," Earthquake Geotechnical Engineering, 4th International Conference on Earthquake Geotechnical Engineering - Invited Lectures, in Geotechnical, Geological, and Earthquake Engineering Series, Vol. 6, Pitilakis, Kyriazis D., Ed., Springer, pp. 327-353, 2007.

4. Bray, J.D. and Sancio, R.B., "Performance of Buildings in Adapazari during the 1999 Kocaeli, Turkey Earthquake," in Earthquake Geotechnical Case Histories for Performance Based Design, Kokusho, T, Ed., TC4 Committee, ISSMFE, CRC Press/Balkema,The Netherlands, pp. 325-340 & Data on CD-ROM, 2009.

JOURNALS

5. R. B. Seed, J. D. Bray and D. Thomas, "Analysis, Design and Prototype Testing of a Smooth-Walled Box Culvert System", Transportation Research Record No. 1231, National Research Council, pp. 1-13, December 1989.

6. J. D. Bray, R. B. Seed and H. B. Seed, "1g Small-Scale Modelling of Saturated Cohesive Soils", Geotechnical Testing Journal, American Society for Testing and Materials, Volume 16, Number 1, pp. 46-53, March 1993.

7. S. M. Merry, J. D. Bray and P. L. Bourdeau, "Axisymmetric Tension Testing of Geomembranes", Geotechnical Testing Journal, American Society for Testing and Materials, Volume 16, Number 3, pp. 384-392, September 1993.

8. J. D. Bray, R. B. Seed, L. S. Cluff and H. B. Seed, "Earthquake Fault Rupture Propagation through Soil", Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 120, No. 3, pp. 543-561, March 1994.

9. J. D. Bray, R. B. Seed and H. B. Seed, "Analysis of Earthquake Fault Rupture Propagation through Cohesive Soil", Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 120, No. 3, pp. 562-580, March 1994.

10. C. A. Lazarte, J. D. Bray, A. M. Johnson and R. E. Lemmer, "Surface Breakage of the 1992 Landers Earthquake and Its Effects on Structures", Bulletin of the Seismological Society of America, Vol. 84, No. 3, pp. 547-561, June 1994.

11. J. D. Bray and P. C. Repetto, "Seismic Design Considerations for Lined Solid Waste Landfills", Journal of Geotextiles and Geomembranes, International Geotextile Society, Vol.13, No. 8, pp. 497-518, August 1994.

12. G. A. Leonards, J. D. Frost and J. D. Bray, "Collapse of a Geogrid-Reinforced Retaining Structure", Journal of Performance of Constructed Facilities, American Society of Civil Engineers, Vol. 8, No. 4, pp. 274-292, November 1994.

13. J. D. Bray, A. J. Augello, G. A. Leonards, P.C. Repetto, and R. J. Byrne, "Seismic Stability Procedures for Solid-Waste Landfills", Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 121, No. 2, pp. 139-151, February 1995.

14. Stewart, J.P., Chang, S.W., Bray, J.D., Seed, R.B., Sitar, N., and Riemer, M. "A Report on Geotechnical Aspects of the January 17, 1994 Northridge Earthquake", Seismological Research Letters, Vol. 66, No. 3, pp.7-19, May/June 1995.

15. R.W. Boulanger, J.D. Bray, S.M. Merry and L.H. Mejia, "Three-Dimensional Dynamic Response Analyses of Cogswell Dam," Canadian Geotechnical Journal, Vol. 32, No. 3, pp. 452-464, June 1995.

16. Espinoza, R.D. and Bray, J.D. "An Integrated Approach to Evaluating Single-Layer Reinforced Soils", Geosynthetics International, Vol. 2, No.4, pp. 723-739, 1995.

17. T.-C. Ke and J.D. Bray, "Modelling of Particulate Media Using Discontinuous Deformation Analysis," Journal of Engineering Mechanics, American Society of Civil Engineers, Vol. 121, No. 11, pp. 1234-1243, November 1995.

18. Merry, S.M. and Bray, J.D. "Size Effects for Multi-Axial Tension Testing of HDPE and PVC Geomembranes", Geotechnical Testing Journal, American Society for Testing and Materials, Vol. 18, No.4, pp. 441-449, December 1995.

19. J. D. Bray, R. B. Seed, L. S. Cluff and H. B. Seed, "Closure to Earthquake Fault Rupture Propagation through Soil", Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 122, No. 1, pp. 82-83, January 1996.

20. Chang, S.W., Bray, J.D., and Seed, R.B. "Engineering Implications of Ground Motions from the Northridge Earthquake," Bulletin of the Seismological Society of America, Vol. 86, No. 1B, pp. S270-S288, February 1996.

21. Stewart, J.P., Seed, R.B., and Bray, J.D. "Incidents of Ground Failure from the 1994 Northridge Earthquake," Bulletin of the Seismological Society of America, Vol. 86, No. 1B, pp. S300-S318, February 1996.

22. Lazarte, C.A. and Bray, J.D. "A Study of Strike-Slip Faulting Using Small-Scale Models," Geotechnical Testing Journal, American Society for Testing and Materials, Vol. 19, No. 2, pp. 118-129, June 1996.

23. G. A. Leonards, J. D. Frost and J. D. Bray, "Closure to Collapse of a Geogrid-Reinforced Retaining Structure", Journal of Performance of Constructed Facilities, American Society of Civil Engineers, Vol. 10, No. 3, pp. 138-140, August 1996.

24. J. D. Bray, A. J. Augello, G. A. Leonards, P.C. Repetto, and R. J. Byrne, "Closure to Seismic Stability Procedures for Solid-Waste Landfills", Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 122, No. 11, pp. 952-954, November 1996.

25. Merry, S.M. and Bray, J.D. "Geomembrane Response in the Wide-Strip Tension Test," Geosynthetics International, Vol. 3, No.4, pp. 517-536, 1996.

26. W.B. Gookin, M.F. Riemer, R.W. Boulanger, and J.D. Bray, "Development of Cyclic Triaxial Apparatus with Broad Frequency and Strain Ranges," Transportation Research Record No. 1548, National Research Council, pp. 1-8, November 1996.

27. Merry, S.M. and Bray, J.D. "Time-Dependent Mechanical Response of HDPE Geomembranes," Journal of Geotechnical Engineering, American Society of Civil Engineers, Vol. 123, No, 1, pp. 57-65, January 1997.

28. Guha, S., Drnevich, V.P., and Bray, J.D. "Dynamic Characteristics of Old Bay Clay," Geotechnical Testing Journal, American Society for Testing and Materials, Vol. 20, No. 4, pp. 383-393, December 1997.

29. Rathje, E.R., Abrahamson, N.A. and Bray J.D. "Simplified Frequency Content Estimates of Earthquake Ground Motions," Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers, Vol. 124, No. 2, pp. 150-159, 1998.

30. Bray, J.D. and Rathje, E.R. "Earthquake-Induced Displacements of Solid-Waste Landfills," Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers, Vol. 124, No. 3, pp. 242-253, 1998.

31. Augello, A.J., Bray J.D, Abrahamson, N.A. and Seed, R.B. "Dynamic Properties of Solid-Waste Based on Back-Analysis of the OII Landfill," Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers, Vol. 124, No. 3, pp. 211- 222, 1998.

32. Field, E. H., Kramer, S., Elgamal, A.-W., Bray, J. D., Matasovic, N., Johnson, P. A., Cramer, C., Roblee, C., Wald, D.J., Bonilla, L.F., Dimitriu, P.P., and Anderson, J.G., "Nonlinear Site Response: Where We're At (A report from a SCEC/PEER seminar and workshop)," Seismological Research Letters, Vol. 69, No. 3, pp. 230-234, May/June, 1998.

33. Harder, L.F., Bray, J.D., Volpe, R.L., and Rodda, K.V., "Performance of Earth Dams During the Loma Prieta Earthquake," The Loma Prieta, California, Earthquake of October 17, 1989- Earth Structures and Engineering Characterization of Ground Motion, Performance of the Built Environment, Holzer, T.L., Coord., U.S. Geological Survey Professional Paper 1552-D, U.S. Gov. Printing Office, Washington D.C., 1998, pp. D3-D26.

34. Bray, J. D., Rathje, E. M., Augello, A. J., and Merry, S. M., "Simplified Seismic Design Procedure for Lined Solid-Waste Landfills," *Geosynthetics International Journal,* Vol. 5, Nos. 1-2, pp. 203-235, 1998. [Invited Publication]

35. Murbach, D., Rockwell, T. K., and Bray, J. D., "The Relationship of Foundation Deformation to Surface and Near-Surface Faulting Resulting from the 1992 Landers Earthquake," *Earthquake Spectra*, The Professional Journal of the Earthquake Engineering Research Institute, Vol. 15, No. 1, 1999, pp. 121-144.

36. Rathje, E.M. and Bray, J.D., "An Examination of Simplified Earthquake-Induced Displacement Procedures for Earth Structures," Canadian Geotechnical Journal, Vol. 36, No. 1, 1999, Feb., pp. 72-87.

37. Thomas, P.A. and Bray, J.D., "Capturing the Nonspherical Shape of Granular Media with Disk Clusters," Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers, Vol. 125, No. 3, pp. 169-178, 1999.

38. Bray, J. D. and Merry, S. M., "A Comparison of the Response of Geosynthetics in the Multi-Axial and Uniaxial Test Devices," *Geosynthetics International Journal,* Vol. 6, No. 1, 1999, pp. 19-40.

39. Rathje, E.M. and Bray, J.D., "An Examination of Simplified Earthquake-Induced Displacement Procedures for Earth Structures: Reply," Canadian Geotechnical Journal, Vol. 37, No. 3, 2000, June, pp. 731-732.

40. Rathje, E. M, and Bray, J. D., "Nonlinear Coupled Seismic Sliding Analysis of Earth Structures," Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers, Vol. 126, No. 11, 2000, pp. 1002-1014.

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