

**JONATHAN D. BRAY, Ph.D., P.E., NAE**  
Faculty Chair in Earthquake Engineering Excellence  
Distinguished Professor of Civil & Environmental Engineering  
University of California, Berkeley

Office Address: Department of Civil and Environmental Engineering  
453 Davis Hall, MC-1710  
University of California  
Berkeley, CA 94720-1710

Office Phone: (510) 642-9843  
Cell Phone: (925) 212-7842  
E-Mail: jonbray@berkeley.edu

## **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

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  
6<sup>th</sup> Ishihara Lecturer, Technical Committee on Earthquake Geotechnical Engineering and Associated Problems, ISSMGE, 2017  
25<sup>th</sup> 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, 18<sup>th</sup> 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 87 - SEP 91)

Developed and conducted facility engineer and environmental surveys of USAR Centers

### PROJECT ENGINEER, Dames & Moore, CA (FEB 90 - JUL 90)

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 85 - AUG 86)

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 83 - AUG 84)

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 82 - JUN 83)

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 80-SEP 80)

Technical Inspector on a \$2 million earth canal/concrete weir project. Developed contractor claim denial which saved the government \$89,000.

## **ACADEMIC EXPERIENCE**

### PROFESSOR, University of California, Berkeley, CA (JUL 99 - Present)

### ASSOCIATE PROFESSOR, University of California, Berkeley, CA (JUL 96 - JUN 99)

### ASSISTANT PROFESSOR, University of California, Berkeley, CA (JAN 93 - JUN 96)

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 90 – DEC 92)

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 90 - MAY 90)

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 88 - JAN 90)

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 (FEAPLOT).

**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  
Affiliate Member, Seismological Society of America

**PROFESSIONAL SERVICE**

Member, Steering Committee, Tailings and Industrial Waste Engineering (TAILENG) Center, 2020-present  
Vice-Chair and Member, Seismic Advisory Board, California Department of Transportation (Caltrans) and California High Speed Rail Authority (CHSRA), 2020-present.  
Member, Technical Committee on Earthquake Geotechnical Engineering and Associated Problems, International Society for Soil Mechanics and Geotechnical Engineering, 2015-present.  
Secretary, Section 4 – Civil & Environmental Engineering, U.S. National Academy of Engineering, 2020-present.  
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.  
Editorial Advisory Board, Geotechnical, Geological and Earthquake Engineering Series, 2006-present.  
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 7<sup>th</sup> 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, 3<sup>rd</sup> 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,” 10<sup>th</sup> 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 8<sup>th</sup> US Nat. Conf. EQ Engrg. Program Comm., 100<sup>th</sup> Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, 2005-2006.

Steering Committee, 11<sup>th</sup> Intl. Conf. on Soil Dynamics & EQ Engrg. And 3<sup>rd</sup> Intl. Conf. on EQ Geotech. Engrg., University of California, Berkeley, Jan. 7-9, 2004.

Member, Geosciences Subcommittee, California Seismic Safety Commission, 2001.

General Reporter, 4<sup>th</sup> 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 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, ongoing research.

“Monotonic and Cyclic Response of Mine Tailings and Post-Cyclic Deformation,” doctoral research topic of Franklin Ricardo Olaya Trinidad, ongoing research.

“Seismic Performance of Natural Gas Transmission Pipelines Affected by Ground Failure,” doctoral research topic of Christopher Bain, ongoing research.

“Discrete Element Modeling of Particle-Crushing Effects in Boreholes in Cemented Sandstone,” doctoral research topic of Xinyi Qian, ongoing research.

#### Post-Doctoral

"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 Travarasou, 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, 2020-2022.

#### (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

Member, Univ. of California Office of the President Seismic Advisory Board, 2017-2020.

Leader, GeoSystems Program, Executive Committee, Dept. of Civil and Environmental Eng., 2015-present.

Member, Library Committee, 2017-present.

Member, College of Engineering Ethics & Social Responsibility Committee, 2019-present.

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, Department 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, Department of CEE, 2007-2008.

Member, Ad hoc Committee on PEER Organizational Structure, 2007.

Chair, High Performance Structural Engineering Faculty Search Committee, Department of CEE, 2006-2007.

Leader, GeoEngineering Group, Executive Committee, Department of Civil and Environmental Engng., 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, Department of Civil and Environmental Engineering, 2000.

Member, Strategic Planning Committee, College of Engineering, 1999-2000.

Graduate Adviser and Admissions Officer, Department of Civil and Environmental Engineering, 1997-2000.

Member, Strategic Planning Committee, Department 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**

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

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

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

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-present.

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

ATC: Serving as a technical co-author of the NEHRP Post-Earthquake Investigation plan, 2021-2022.

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.

Cotton Shires Associates: Providing guidance regarding the re-evaluation of the stability of the Bear Gulch Dam, Atherton, CA, 2014-2021.

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.

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 Internacional 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.

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 Wastechнологies: 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**

“Liquefaction-Induced Ground Settlement Procedure,” State of California, Department of Transportation (Caltrans), 10/21-

9/22, \$65,000; Principal Investigator.

“Assessment of the Performance of the Ground and Facilities at Wellington Port during Three Earthquakes,” National Science Foundation, 04/20-03/23, \$480,382; Principal Investigator.

“Performance Based Earthquake Engineering Assessment Tool for Gas Storage and Transmission System,” California Energy Commission, 12/19-03/22, \$4,940,158; 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  $M_w$ 7.8 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)**

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

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

"Soil Liquefaction Effects on Buildings," Keynote Lecture, 6<sup>th</sup> 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, 17<sup>th</sup> 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 2019 Annual 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 36<sup>th</sup> 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,” 25<sup>th</sup> Buchanan Lecture, Texas A&M, College Station, Texas, Oct. 13, 2017.

“Simplified Procedure for Estimating Liquefaction-Induced Building Settlement,” 6<sup>th</sup> Ishihara Honours Lecture, 19<sup>th</sup> 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, 19<sup>th</sup> International Conf. on Soil Mechanics and Geotechnical Engineering, Seoul, South Korea, Sept. 20, 2017.

“Key Trends in Assessing Liquefaction-Induced Building Settlement,” 3<sup>rd</sup> 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,” 2<sup>nd</sup> 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, 6<sup>th</sup> 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, 3<sup>rd</sup> IACEGE International Conference on Geotechnical and Earthquake Engineering (IACGE2015) and the 28<sup>th</sup> ICTPA Annual Conference (ICTPA28) Technical Program, Irvine, CA, May 15, 2015.

“Investigating Liquefaction Effects in Christchurch, New Zealand,” Sowers Lecture, 18<sup>th</sup> 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/117<sup>th</sup> 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, 12<sup>th</sup> 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,” 10<sup>th</sup> 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,” 10<sup>th</sup> 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 18<sup>th</sup> 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 11<sup>th</sup> 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,” 29<sup>th</sup> 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,” 5<sup>th</sup> 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, 9<sup>th</sup> US National and 10<sup>th</sup> 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 2010 Session, 9<sup>th</sup> US National and 10<sup>th</sup> 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, 4<sup>th</sup> 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, 4<sup>th</sup> 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,” 100<sup>th</sup> 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,” 1<sup>st</sup> 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 Yaklasmlar ve Modern Teknolojiler, Bogazici University, Istanbul, Turkey, July 5, 2000.

“Issues in Earthquake Engineering,” 3<sup>rd</sup> 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 5<sup>th</sup> 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 400 research publications)**

### BOOKS

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.

Bray, J.D. "Retaining Structures" and "Geotechnical Earthquake Engineering" Chapters 22 and 25, respectively, in The Civil Engineering Handbook, 2<sup>nd</sup> 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, 2002.

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.

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

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

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]

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.

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.

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.

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.

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.

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.

Youd, T.L., Bardet, J.P., and Bray, J.D., Technical Editors, Kocaeli, Turkey Earthquake of August 17, 1999 Reconnaissance Report, in *Earthquake Spectra* Journal, Suppl. A to Vol. 16, EERI, 2000, 461 pp.

Bray, J.D., and Stewart, J. P., (Coordinators and Principal Contributors), Baturay, M.B., Durgunoglu, T., Onalp, A., Sancio, R.B., and Ural, D. (Principal Contributors), "Damage Patterns and Foundation Performance in Adapazari," Chapter 8 of the Kocaeli, Turkey Earthquake of August 17, 1999 Reconnaissance Report, in *Earthquake Spectra* Journal, Suppl. A to Vol. 16, EERI, 2000, pp. 163-189.

Lettis, W., Bachhuber, J, Witter, R., (Coordinators and Principal Contributors), Barka, A., Bray, J., Page, W., and Swan, F. (Principal Contributors), "Surface Fault Rupture," Chapter 2 of the Kocaeli, Turkey Earthquake of August 17, 1999 Reconnaissance Report, in *Earthquake Spectra* Journal, Suppl. A to Vol. 16, EERI, 2000, pp. 11-53.

Bardet, J.P., Seed, R.B., (Coordinators and Principal Contributors), Cetin, K. O., Lettis, W., Rathje, E., Rau, G., Ural, D., (Principal Contributors), Baturay, M.B., Boulanger, R.W., Bray, J.D., Erten, D., Frost, D., Kaya, A., Sozer, B. Stewart, J.P., Sunman, B., and Yilmaz, T. (Contributors), "Soil Liquefaction, Landslides, and Subsidence," Chapter 7 of the Kocaeli, Turkey Earthquake of August 17, 1999 Reconnaissance Report, in *Earthquake Spectra* Journal, Suppl. A to Vol. 16, EERI, 2000, pp. 141-162.

Rodriguez-Marek, A., Bray, J. D., and Abrahamson, N. A., "An Empirical Geotechnical Seismic Site Response Procedure," *Earthquake Spectra*, The Professional Journal of the Earthquake Engineering Research Institute, V. 17, No. 1, Feb., 2001, pp. 65-87.

Kelson, K. (Coordinator), Bray, J., Cluff, L., Harder, L., Kieffer, S., Page, W., Perkins, W., Rix, G., Roblee, C., Sitar, N., Wells, D., Wright, R., and Yashinsky, M. (Contributors), "Fault-Related Surface Deformation," Chapter 3 of the Chi-Chi, Taiwan, Earthquake of September 21, 1999 Reconnaissance Report, in *Earthquake Spectra* Journal, Suppl. A to Vol. 17, EERI, 2001, pp. 19-36.

Rathje, E. M., and Bray, J.D., "One- and Two-Dimensional Seismic Analysis of Solid-Waste Landfills," *Canadian Geotechnical Journal*, Vol. 38, No. 4, August 2001, pp. 850-862.

- Stewart, J.P., Bray, J.D., McMahon, D. J., Smith, P.M., and Kropp, A. L., "Seismic Performance of Hillside Fills," *Journal of Geotechnical and Geoenvironmental Engineering*, American Society of Civil Engineers, Vol. 127, No. 11, 2001, pp. 905-919.
- Pestana, J. M, Hunt, C.E., and Bray, J. D., "Soil Deformation and Excess Pore Pressure Field around a Closed-Ended Pile Driven in a Soft Clay," *Journal of Geotechnical and Geoenvironmental Engineering*, American Society of Civil Engineers, Vol. 128, No. 1, 2002, pp. 1-12.
- Hunt, C.E., Pestana, J. M, Bray, J. D., and Riemer, M., "Effect of Pile Driving on the Static and Dynamic Properties of a Soft Clay," *Journal of Geotechnical and Geoenvironmental Engineering*, American Society of Civil Engineers, Vol. 128, No. 1, 2002, pp.13-24.
- O'Sullivan, C., Bray, J. D., and Riemer, M. F., "The Influence of Particle Shape and Surface Friction Variability in Particulate Media Response," *Journal of Engineering Mechanics*, American Society of Civil Engineers, V. 128, No. 11, Nov. 2002, pp. 1182-1192.
- Pestana, J.M., Sancio, R.B., Bray, J.D., Romo, M.P., Mendoza, M.J., Moss, R.E.S., Mayoral, J.M., and Seed, R.B., "Geotechnical Engineering Aspects of the June 1999 Central Mexico Earthquakes," *Earthquake Spectra*, The Professional Journal of the Earthquake Engineering Research Institute, August 2002. Vol. 18 (3), pp. 481-499.
- Sancio, R. B., J. D. Bray, J. P. Stewart, T. L. Youd, H.T. Durgunoglu, A. Onalp, R. B. Seed, C. Christensen, M. B. Baturay, and T. Karadayilar, "Correlation Between Ground Failure And Soil Conditions In Adapazari, Turkey," *Soil Dynamics and Earthquake Engineering Journal*, October-December 2002, V. 22 (9-12), pp 1093 - 1102.
- Cetin, K. O., T. L. Youd, R. B. Seed, J. D. Bray, , R. B. Sancio, W. Lettis, M. T. Yilmaz, and H.T. Durgunoglu, "Liquefaction-Induced Ground Deformations at Hotel Sapanca During Kocaeli (Izmit)-Turkey Earthquake," *Soil Dynamics and Earthquake Engineering Journal*, October-December 2002, V. 22 (9-12), pp. 1083-1092.
- Stewart, J. P., Chiou, S-J., Bray, J.D., Graves, R. W., Somerville, P.G., and Abrahamson, N.A. "Ground Motion Evaluation Procedures for Performance-Based Design," *Soil Dynamics and Earthquake Engineering Journal*, October-December 2002, V. 22 (9-12), pp. 765-772.
- Travasarou, T., Bray, J.D., and Abrahamson, N.A. "Empirical Attenuation Relationship for Arias Intensity," *Journal of Earthquake Engineering and Structural Dynamics*, Vol. 32, June 2003, pp. 1133-1155.
- Stewart, J.P., Bray, J.D., McMahon, D.J., Smith, P.M., and Kropp, A.L. "Closure to 'Seismic Performance of Hillside Fills,'" *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 129, No. 6, 2003, pp. 570-571.
- O'Sullivan, C. and Bray, J.D., "Modified Shear Spring Formulation for Discontinuous Deformation Analysis of Particulate Media," *Journal of Engineering Mechanics*, ASCE, Vol. 129, No. 7, July 2003, pp. 830-824.
- Pestana, J. M, Hunt, C.E., and Bray, J. D., "Closure to 'Soil Deformation and Excess Pore Pressure Field around a Closed-Ended Pile Driven in a Soft Clay,'" *Journal of Geotechnical and Geoenvironmental Engineering*, American Society of Civil Engineers, Vol. 129, No. 7, July 2003, p. 671.
- O'Sullivan, C., Bray, J.D., and Li, S. "A New Approach for Calculating Strain for Particulate Media," *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. 27(10), July 2003, pp. 859-877.
- Wartman, J., Bray, J.D., and Seed, R.B. "Inclined Plane Studies of the Newmark Sliding Block Procedure," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 129, No. 8, August 2003, pp. 673-684.
- Rathje, E.M., Faraj, F., Russell, S., and Bray, J.D. "Empirical Relationships for Frequency Content Parameters of Earthquake Ground Motions," *Earthquake Spectra*, Earthquake Engineering Research Institute, Vol. 20 (1), February 2004, pp. 119-144.

- Stewart, J.P., Smith, P.M., Whang, D.H., and Bray, J.D. "Seismic Compression of Two Compacted Earth Fills Shaken by the 1994 Northridge Earthquake," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 130, No. 5, May 2004, pp 461-476.
- O'Sullivan, C. and Bray, J.D., "Selecting a Suitable Time Step for Discrete Element Simulations that Use the Central Difference Time Integration Scheme," *Engineering Computations: International Journal for Computer-Aided Engineering and Software*, Vol. 21, No. 2, 2004, pp. 278-303.
- Bray, J. D., R. B. Sancio, H.T. Durgunoglu, A. Onalp, T. L. Youd, J. P. Stewart, R. B. Seed, O.K. Cetin, E. Bol, M. B. Baturay, C. Christensen, and T. Karadayilar, "Subsurface Characterization at Ground Failure Sites in Adapazari, Turkey," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 130, No. 7, July 2004, pp. 673-685.
- Whang, D.H., Stewart, J.P., and Bray, J.D. "Effect of Compaction Conditions on the Seismic Compression of Compacted Fill Soils," *Geotechnical Testing Journal*, American Society for Testing and Materials, Vol. 27, No. 4, July, 2004, pp. 1-9
- O'Sullivan, C., Bray, J. D., and Riemer, M. F., "Examination of the Response of Regularly Packed Specimens of Spherical Particles Using Physical Tests and Discrete Element Simulations," *Journal of Engineering Mechanics*, ASCE, V. 130, No. 10, Oct. 2004, pp 1140-1150.
- Bray, J.D. and Rodriguez-Marek, A., "Characterization of forward-directivity ground motions in the near-fault region," *Soil Dynamics and Earthquake Engineering*, V. 24(11), Dec. 2004, pp. 815-828.
- Cetin, O.K., T. L. Youd, R. B. Seed, J. D. Bray, J.P. Stewart, H.T. Durgunoglu, W. Lettis, and M.T. Yilmaz, "Liquefaction-Induced Lateral Spreading at Izmit Bay During the Kocaeli (Izmit) – Turkey Earthquake," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 130, No. 12, December 2004, pp. 1300-1313.
- Bird, J.F., Bommer, J., Bray, J.D., Sancio, R., and Spence, R.J.S. "Comparing Loss Estimation with Observed Damage in a Zone of Ground Failure: A Study of the 1999 Kocaeli Earthquake in Turkey," *Bulletin of Earthquake Engineering*, V. 2, pp. 329-360, 2004.
- Sancio, R.B. and Bray, J.D., "An Assessment of the Effect of Rod Length on SPT Energy Calculations Based on Measured Field Data," *Geotechnical Testing Journal*, ASTM, Vol. 28(1), Paper GTJ11959, pp. 1-9, Jan. 2005.
- Wartman, J., Seed, R.B., and Bray, J.D. "Shaking Table Modeling of Seismically Induced Deformation in Slopes," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 131, No. 5, May 2005, pp.610-622.
- Kim, J., Riemer, M., and Bray, J.D., "Dynamic Properties of Geosynthetic Interfaces," *Geotechnical Testing Journal*, ASTM, Vol. 28(3), Paper GTJ11856, May, 2005, pp. 288-296.
- Stewart, J.P., Smith, P.M., Whang, D.H., and Bray, J.D. "Closure to 'Seismic Compression of Two Compacted Earth Fills Shaken by the 1994 Northridge Earthquake,'" *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 131, No. 12, December 2005, pp 1564-1569.
- Merry, S.M., Bray, J.D., and Yoshitomi, S., "Axisymmetric Temperature- and Stress-Dependent Creep Response of 'New' and 'Old' HDPE Geomembranes," *Geosynthetics International*, V. 12, No. 3, 2005, pp. 156-161.
- Bray, J. D., R. B. Sancio, H.T. Travasarou, T., Durgunoglu, A. Onalp, T. L. Youd, J. P. Stewart, R. B. Seed, O.K. Cetin, E. Bol, M. B. Baturay, C. Christensen, and T. Karadayilar, "Closure to 'Subsurface Characterization at Ground Failure Sites in Adapazari, Turkey,'" *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 132, No. 4, 2006, pp. 541-547.
- Bray, J.D. and Kelson, K.I., "Observations of Surface Fault Rupture from the 1906 Earthquake in the Context of Current Practice," *Earthquake Spectra*, Earthquake Engineering Research Institute, Vol. 22, No. S2, 2006, pp. S69-S89.
- Cetin, O.K., T. L. Youd, R. B. Seed, J. D. Bray, J.P. Stewart, H.T. Durgunoglu, W. Lettis, and M.T. Yilmaz, "Closure to 'Liquefaction-Induced Lateral Spreading at Izmit Bay During the Kocaeli (Izmit) – Turkey Earthquake,'" *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 132, No. 7, July 2006, pp. 956-959.

- Bray, J.D. and Sancio, R.B., "Assessment of the Liquefaction Susceptibility of Fine-Grained Soils," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 132, No. 9, Sept., 2006, pp. 1165-1177.
- Zekkos, D.P., Bray, J.D., Kavazanjian, E., Matasovic, N., Rathje, E.M., Riemer, M.F., and Stokoe II, K.H., "Unit Weight of Municipal Solid-Waste," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 132, No. 10, Oct. 2006, pp. 1250-1261.
- Rathje, E.M., Stewart, J.P., Baturay, M.B., Bray, J.D., and Bardet, J.P., "Strong Ground Motions and Damage Patterns from the 1999 Duzce Earthquake in Turkey," Journal of Earthquake Engineering, Vol. 10, No. 5, 2006, pp. 693-724.
- Rodriguez-Marek, A. and Bray, J.D., "Seismic Site Effects for Near-Fault Forward Directivity Ground Motions," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 132, No. 12, Dec. 2006, pp. 1611-1620.
- Bray, J.D. and Travararou, T., "Simplified Procedure for Estimating Earthquake-Induced Deviatoric Slope Displacements," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 133, No. 4, April 2007, pp. 381-392.
- Zekkos, D., Bray, J.D., and Riemer, M.F. "Shear Modulus and Material Damping of Municipal Solid Waste Based on Large-Scale Cyclic Triaxial Testing," Canadian Geotechnical Journal, Vol. 45, No. 1, 2008, pp. 45-58.
- Seed, R.B., Bea, R.G., Athanasopoulos-Zekkos, A., Boutwell, G.P., Bray, J.D., Cheung, C., Cobos-Roa, D., Ehrensing, L., Harder, Jr., L.F., Pestana, J.M., Riemer, M.F., Rogers, J.D., Storesund, R., Vera-Grunauer, X, and Wartman, J. "New Orleans and Hurricane Katrina II: The Central Region and the Lower Ninth Ward," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 134, No. 5, May 2008, pp. 718-739.
- Seed, R.B., Bea, R.G., Athanasopoulos-Zekkos, A., Boutwell, G.P., Bray, J.D., Cheung, C., Cobos-Roa, D., Harder, Jr., L.F., Moss, R.E.S., Pestana, J.M., Riemer, M.F., Rogers, J.D., Storesund, R., Vera-Grunauer, X, and Wartman, J. "New Orleans and Hurricane Katrina III: The 17<sup>th</sup> Street Drainage Canal," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 134, No. 5, May 2008, pp. 740-761.
- Seed, R.B., Bea, R.G., Athanasopoulos-Zekkos, A., Boutwell, G.P., Bray, J.D., Cheung, C., Cobos-Roa, D., Cohen-Waeber, J., Collins, B.D., Harder, Jr., L.F., Kayen, R.E., Pestana, J.M., Riemer, M.F., Rogers, J.D., Storesund, R., Vera-Grunauer, X, and Wartman, J. "New Orleans and Hurricane Katrina IV: Orleans East Bank (Metro) Protected Basin," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 134, No. 5, May 2008, pp. 762-779.
- Bray, J.D. and Sancio, R.B., "Closure to 'Assessment of the Liquefaction Susceptibility of Fine-Grained Soils,'" J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 134, No. 7, July 2008, pp. 1031-1034.
- Youd, T.L., DeDen, D.W., Bray, J.D., Sancio, R., Cetin, K.O., and Gerber, T., "Zero-Displacement Lateral Spreads, 1999 Kocaeli, Turkey, Earthquake," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 135, No. 1, 2009, pp. 46-61.
- Bray, J.D., Rodriguez-Marek, A., and Gillie, J. L., "Design Ground Motions Near Active Faults," *Bulletin of the New Zealand Society for Earthquake Engineering*, 42 (1), March 2009, 8 pp.
- Bray, J.D., Zekkos, D.P., Kavazanjian, E., Athanasopoulos, G, and Riemer, M.F., "Shear Strength of Municipal Solid Waste," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 135, No. 6, 2009, pp. 709-722.
- Bray, J.D. and Travararou, T., "Pseudostatic Coefficient for Use in Simplified Seismic Slope Stability Evaluation," J. of Geotechnical and Geoenvironmental Engineering, ASCE, 135(9), 2009, 1336-1340.
- Dashti, S., Bray, J. D., Pestana, J. M., Riemer, M.F., and Wilson, D., "Mechanisms of Seismically-Induced Settlement of Buildings with Shallow Foundations on Liquefiable Soil," J. of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 136(1), 2010, 151-164.

- Ledezma, C and Bray, J. D., "Probabilistic Performance-Based Procedure to Evaluate Pile Foundations at Sites with Liquefaction-Induced Lateral Displacement," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 136 (3), 2010, 464-476.
- Dashti, S., Bray, J. D., Pestana, J. M., Riemer, M.F., and Wilson, D., "Centrifuge Testing to Evaluate and Mitigate Liquefaction-Induced Building Settlement Mechanisms," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 136(7), 2010, pp. 918-929.
- Zekkos, D. Athanasopoulos, G. A., Bray, J. D., Grizi, A., and Theodoratos, A., "Large-Scale Direct Shear Testing of Municipal Solid Waste," *Waste Management J.*, Elsevier Vol. 30(8-9), August-September 2010, pp. 1544-1555.
- Zekkos, D.P., Kavazanjian, E., Bray, J.D., Matasovic, N., and Riemer, M.F., "Physical Characterization of Municipal Solid Waste for Geotechnical Purposes," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 136(9), 2010, pp. 1231-1241.
- Bray, J.D., Zekkos, D.P., Kavazanjian, E., Athanasopoulos, G, and Riemer, M.F., "Closure to 'Shear Strength of Municipal Solid Waste,'" *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 136(12), 2010, pp. 1731-1732.
- Cubrinovski, M., Bray, J.D., Taylor, M., Giorgini, S., Bradley, B., Wotherspoon, L., and Zupan, J., "Soil Liquefaction Effects in the Central Business District during the February 2011 Christchurch Earthquake," *Seismological Research Letters*, Nov./Dec. 2011, V. 82(6), pp. 893-904.
- Dashti, S., Bray, J., Pestana, J., Riemer, M., and Wilson, D. "Closure to 'Mechanisms of Seismically Induced Settlement of Buildings with Shallow Foundations on Liquefiable Soil'" *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 137(3), March 2011, pp. 309–310.
- Cubrinovski, M., Bradley, B., Wotherspoon, L., Green, R.A., Bray, J.D., Wood, C., Pender, M., Allen, J., Bradshaw, A., Rix, G., Taylor, M., Robinson, K., Henderson, D., Giorgini, S., Ma, K., Winkely, A., Zupan, J., O'Rourke, T., DePascale, G., and Wells, D., "Geotechnical Aspects of the 22 February 2011 Christchurch Earthquake," *Bulletin of the New Zealand Society for Earthquake Engineering*, Vol. 44, No. 4, Dec. 2011, pp. 205-226.
- Zekkos, D. Bray, J. D., and Riemer, M.F. (2012) "Drained Response of Municipal Solid Waste in Large-Scale Triaxial Shear Testing," *Waste Management J.*, Elsevier, V. 32, 1873-1885.
- Bray, J.D., Rollins, K., Hutchinson, T., Verdugo, R., Ledezma, C., Mylonakis, G., Assimaki, A., Montalva, G., Arduino, P., Olson, S.M., Kayen, R., Hashash, Y.M.A., and Candia, G. (2012) "Effects of Ground Failure on Buildings, Ports, and Industrial Facilities," *Earthquake Spectra J.*, V. 28(S1), pp. S97-S118.
- Verdugo, R., Sitar, S. Frost, J.D., Bray, J.D., Candia, G., Eldridge, T., Hashash, Y., Olson, S.M., and Urzua, A., (2012) "Seismic Performance of Earth Structures: Dams, Levees, Tailings Dams and Retaining Walls," *Earthquake Spectra J.*, V. 28(S1), pp. S75-S96.
- Ledezma, C., Hutchinson, T., Ashford, S.A., Moss, R., Arduino, P., Bray, J.D., Kayen, R., Olson, S.M., Hashash, Y.M.A., Frost, J.D., Verdugo, R., Sitar, N., and Rollins, K., (2012) "Effects of Ground Failure on Bridges, Roads, and Railroads," *Earthquake Spectra J.*, V. 28(S1), pp. S119-S144.
- Mason, H.B., Trombetta, N.W., Chen, Z., Bray, J.D., Hutchinson, T.C., and Kutter, B.L. (2013) "Seismic soil-foundation-structure interaction observed in geotechnical centrifuge experiments," *Soil Dynamics & Earthquake Engineering*, V. 48, pp. 162-174.
- Trombetta, N.W., Mason, H.B., Chen, Z., Hutchinson, T.C., Bray, J.D., and Kutter, B.L. (2013) "Nonlinear dynamic foundation and frame structure response observed in geotechnical centrifuge experiments," *Soil Dynamics & Earthquake Engineering*, V. 50, pp. 117-133.
- Chen, Z., Trombetta, N.W., Hutchinson, T.C., Mason, H.B., Bray, J.D., and Kutter, B.L. (2013) "Seismic System Identification using Centrifuge-Based Soil-Structure Interaction Test Data," *J. of Earthquake Engineering*, 17(4), 469-496.

10.1080/13632469.2012.762956.

Reilly, J., Dashti, S., Ervasti, M., Bray, J.D., Glaser, S.D., and Bayen, A.M. (2013) "Mobile Phones as Seismologic Sensors: Automating Data Extraction for the iShake System," *IEEE Transactions on Automation Science and Engineering*, V. 10(2), 242-251.

Dashti, S. and Bray, J. D. (2013) "Numerical Simulation of Building Response on Liquefiable Sand," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 139(8), 1235-1249.

Oettle, N, and Bray, J.D. (2013) "Fault Rupture Propagation through Previously Ruptured Soil," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 139(10), 1637-1647, DOI: [http://dx.doi.org/10.1061/\(ASCE\)GT.1943-5606.0000919](http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0000919).

Oettle, N, and Bray, J.D. (2013) "Geotechnical Mitigation Strategies for Earthquake Surface Fault Rupture," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 139(11), 1864-1874, DOI: [http://dx.doi.org/10.1061/\(ASCE\)GT.1943-5606.0000933](http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0000933).

van Ballegooy, S., P. Malan, V. Lacrosse, M.E. Jacka, M. Cubrinovski, J.D. Bray, T. D. O'Rourke, S.A. Crawford, and H. Cowan (2014) "Assessment of Liquefaction-Induced Land Damage for Residential Christchurch," *Earthquake Spectra J.*, Earthquake Engineering Research Institute, Vol. 30(1), 31-55, DOI: 10.1193/031813EQS070M.

Bray, J.D., Cubrinovski, M., Zupan, J., and Taylor, M. (2014) "Liquefaction Effects on Buildings in the Central Business District of Christchurch," *Earthquake Spectra J.*, Earthquake Engineering Research Institute, Vol. 30(1), 85-109, DOI: 10.1193/022113EQS043M.

Dashti, S., Bray, J.D., Reilly, J., Glaser, S., Bayen, A., and Ervasti, M. (2014) "Evaluating the Reliability of Mobile Phones as Seismic Monitoring Instruments," *Earthquake Spectra J.*, Earthquake Engineering Research Institute, Vol. 30(2), 1-22, DOI: 10.1193/091711EQS229M.

Bray, J.D., and Dashti, S. (2014) "Liquefaction-Induced Building Movements," *Bulletin of Earthquake Engineering*, Springer, Vol. 12(3), 1129-1156, DOI: 10.1007/s10518-014-9619-8.

Trombetta, N.W., Mason, H.B., Hutchinson, T.C., Zupan, J.D., Bray, J.D., and Kutter, B.L. (2014) "Nonlinear Soil-Foundation-Structure and Structure-Soil-Structure Interaction: Centrifuge Test Observations," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 140(5), Paper 04013057; 10.1061/(ASCE)GT.1943-5606.0001074.

Hayden, C., Bray, J.D., and Abrahamson, N.A. (2014) "Selection of Near-Fault Pulse Motions," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 140(7), Paper 04014030, [http://dx.doi.org/10.1061/\(ASCE\)GT.1943-5606.0001129](http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001129).

Hayden, C.P., Zupan, J.D., Bray, J.D., Allmond, J.D., and Kutter, B.L. (2015) "Centrifuge Tests of Adjacent Mat-Supported Buildings Affected by Liquefaction," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 141(3), Paper 04014118, [http://dx.doi.org/10.1061/\(ASCE\)GT.1943-5606.0001253](http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001253).

Oettle, N., Bray, J.D., and Dreger, D. (2015) "Dynamic Effects of Surface Fault Rupture Interaction with Structures," *Soil Dynamics and Earthquake Engineering J.*, V. 72, 37-47, <http://dx.doi.org/10.1016/j.soildyn.2015.01.019>.

Trombetta, N.W., Mason, H.B., Hutchinson, T.C., Zupan, J.D., Bray, J.D., and Kutter, B.L. (2015) "Nonlinear Soil-Foundation-Structure and Structure-Soil-Structure Interaction: Engineering Demands," *J. of Structural Engineering*, ASCE, 141(7), 04014177. 10.1061/(ASCE)ST.1943-541X.0001127.

Gingery, J., Elgamal, A., and Bray, J.D. (2015) "Response Spectra at Liquefaction Sites during Shallow Crustal Earthquakes," *Earthquake Spectra J.*, Earthquake Engineering Research Institute, V. 31(4), 2325-2349, DOI: 10.1193/101813EQS272M.

Allmond, J., Kutter, B.L., Bray, J.D., and Hayden, C. (2015) "A New Database for Foundation and Ground Performance in

Liquefaction Experiments,” *Earthquake Spectra J.*, Earthquake Engineering Research Institute, V. 31(4), 2485-2509, DOI: 10.1193/072814EQS120.

Markham, C.S., Bray, J.D., Macedo, J., and Luque, R. (2016) “Evaluating Nonlinear Effective Stress Site Response Analyses using Records from the Canterbury Earthquake Sequence,” *Soil Dynamics and Earthquake Engineering J.*, V. 82(1), 84-98, <http://dx.doi.org/10.1016/j.soildyn.2015.12.007>.

Markham, C.S., Bray, J.D., Riemer, M.F., and Cubrinovski, M. (2016) “Characterization of Shallow Soils in the Central Business District of Christchurch, New Zealand,” *Geotechnical Testing J.*, ASTM, doi:10.1520/GTJ2015024.

Stewart, J. P., Kramer, S. L., Kwak, D. Y., Greenfield, M. W., Kayen, R. E., Tokimatsu, K., Bray, J. D., Beyzaei, C. Z., Cubrinovski, M., Sekiguchi, T., Nakai, S., and Bozorgnia, Y. (2016) “PEER-NGL Project: Open Source Global Database and Model Development for the Next-Generation of Liquefaction Assessment Procedures,” *Soil Dynamics and Earthquake Engineering J.*, V. 91, 317-328, <http://dx.doi.org/10.1016/j.soildyn.2016.07.009>.

Oettle, N., and Bray, J.D. (2017) “Numerical Procedures for Simulating Earthquake Fault Rupture Propagation,” *International Journal of Geomechanics*, V. 17(1), ASCE, [http://dx.doi.org/10.1061/\(ASCE\)GM.1943-5622.0000661](http://dx.doi.org/10.1061/(ASCE)GM.1943-5622.0000661).

Bray, J.D., Markham, C.S., and Cubrinovski, M. (2017) “Liquefaction Assessments at Shallow Foundation Building Sites in the Central Business District of Christchurch, New Zealand,” *Soil Dynamics and Earthquake Engineering J.*, V. 92, 153-164, <http://dx.doi.org/10.1016/j.soildyn.2016.09.049>.

Cubrinovski, M., Bray, J.D., de la Torre, C., Olsen, M., Bradley, B.A., Chiaro, G., Stocks, E., and Wotherspoon, L. (2017) “Liquefaction Effects and Associated Damages Observed at the Wellington CentrePort from the 2016 Kaikoura Earthquake,” *Bulletin of the New Zealand Society for Earthquake Engineering*, V. 50(2), 152-173.

Luque, R., and Bray, J.D. (2017) “Dynamic Analyses of Two Buildings Founded on Liquefiable Soils during the Canterbury Earthquake Sequence,” *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 143(9) DOI: 10.1061/(ASCE)GT.1943-5606.0001736.

Bray, J.D. and Luque, R. (2017) “Seismic Performance of a Building Affected by Moderate Liquefaction during the Christchurch Earthquake,” *Soil Dynamics and Earthquake Engineering J.*, V. 102, 99-111, doi: 10.1016/j.soildyn.2017.08.011.

Bray, J.D. and Macedo, J. (2017) “6th Ishihara Lecture: Simplified Procedure for Estimating Liquefaction-Induced Building Settlement,” *Soil Dynamics and Earthquake Engineering J.*, V. 102, 215-231, doi: 10.1016/j.soildyn.2017.08.026.

Bray, J.D., Macedo, J., and Travararou, T. (2018) “Simplified Procedure for Estimating Seismic Slope Displacements for Subduction Zone Earthquakes,” *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 144(3): 04017124, DOI: 10.1061/(ASCE)GT.1943-5606.0001833.

Beyzaei, C.Z., Bray, J.D., van Ballegooy, S., Cubrinovski, S., and Bastin, S. (2018) “Depositional environment effects on observed liquefaction performance in silt swamps during the Canterbury earthquake sequence,” *Soil Dynamics and Earthquake Engineering J.*, V. 107, 303-321, <https://doi.org/10.1016/j.soildyn.2018.01.035>.

Cubrinovski, M., Bray, J.D., de la Torre, C., Olsen, M., Bradley, B.A., Chiaro, G., Stocks, E., Wotherspoon, L., and Krall, T. (2018) “Liquefaction-Induced Damage and CPT Characterization of the Reclamations at CentrePort, Wellington,” *B. Seismological Society of America*, V. 108(3), doi.org/10.1785/0120170246.

Markham, C.S., Bray, J.D., Cubrinovski, M., and Riemer, M.F. (2018) “Liquefaction Resistance and Steady State Characterization of Shallow Soils within the Christchurch Central Business District,” *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 144(6), doi.org/10.1061/(ASCE)GT.1943-5606.0001823.

Carlton, B., Pestana, J.M., Bray, J.D., and Tokimatsu, K. (2018). A Simplified Model to Estimate Non-Liquefiable NEHRP F Site Design Spectra,” *Soil Dynamics and Earthquake Engineering J.*, V. 110, 28-42, doi: 10.1016/j.soildyn.2018.04.009.

- Beyzaei, C.Z., Bray, J.D., Cubrinovski, S., Riemer, M., and Stringer, M. (2018) "Laboratory-Based Characterization of Shallow Silty Soils in Southwest Christchurch," *Soil Dynamics and Earthquake Engineering J.*, V. 110, 93-109, doi.org/10.1016/j.soildyn.2018.01.046.
- Macedo, J., Bray, J.D., Abrahamson, N., and Travarasrou, T. (2018) "Performance-based probabilistic seismic slope displacement procedure," *Earthquake Spectra J.*, Earthquake Engineering Research Institute, V. 34(2), 673-695, doi.org/10.1193/122516EQS251M.
- Garcia, F.E., and Bray, J.D. (2018) "Distinct Element Simulations of Shear Rupture in Dilatant Granular Media," *International Journal of Geomechanics*, ASCE, V. 18(9), DOI: 10.1061/(ASCE)GM.1943-5622.0001238.
- Macedo, J. and Bray, J.D. (2018) "Key Trends in Liquefaction-Induced Building Settlement," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 144(11), DOI: 10.1061/(ASCE)GT.1943-5606.0001951.
- Garcia, F.E., and Bray J.D. (2018) "Distinct element simulations of earthquake fault rupture through materials of varying density," *Soils and Foundations*, V. 58, 986-1000, DOI: <https://doi.org/10.1016/j.sandf.2018.05.009>
- Garcia, F.E., and Bray J.D. (2019) "Modeling the Shear Response of Granular Materials with Discrete Element Assemblages of Sphere-Clusters," *Computers and Geotechnics*, V. 106, 99-107, DOI: 10.1016/j.compgeo.2018.10.003.
- Bray, J.D., Frost, J.D., Rathje, E.R., and Garcia, F.E. (2019) "Recent Advances in Geotechnical Post-Earthquake Reconnaissance," *Frontiers in Built Environment J.*, V. 5:5, doi: 10.3389/fbuil.2019.00005.
- Garcia, F.E., and Bray J.D. (2019) "Discrete Element Analysis of Earthquake Fault Rupture-Soil-Foundation Interaction," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 145(9), doi: 10.1061/(ASCE)GT.1943-5606.0002092.
- Macedo, J., Abrahamson, N., and Bray, J.D. (2019) "Arias Intensity Conditional Scaling Ground-Motion Models for Subduction Zone," *B. Seismological Society of America*, V. 109(4), 1342-1357, doi: 10.1785/0120180297.
- Yerro, A., Soga, K., and Bray, J.D. (2019) "Runout Evaluation of the Oso Landslide with the Material Point Method," *Canadian Geotechnical J.*, 56: 1304-1317, doi: 10.1139/cgj-2017-0630.
- Garcia, F.E., and Bray J.D. (2019) "Discrete Element Analysis of the Influence of Granular Soil Density on Earthquake Surface Fault Rupture Interaction with Rigid Foundations," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 145(11), doi: 10.1061/(ASCE)GT.1943-5606.0002163.
- Bray, J.D., and Macedo, J. (2019) "Procedure for Estimating Shear-Induced Seismic Slope Displacement for Shallow Crustal Earthquakes," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 145(12), doi: 10.1061/(ASCE)GT.1943-5606.0002143.
- Beyzaei, C.Z., Bray, J.D., Cubrinovski, S., Bastin, S., Riemer, M., Stringer, M., Jacka, M., van Ballegooy, S., and Wentz, R. (2020) "Characterization of Silty Soil Thin-Layering and Groundwater Conditions for Liquefaction Assessment," *Canadian Geotechnical J.*, doi: 10.1139/cgj-2018-0287.
- Dhakal, R., Cubrinovski, M., Bray, J.D., and de la Torre, C., (2020) "Liquefaction Assessment of Reclaimed Land at CentrePort, Wellington," *Bulletin of the New Zealand Society for Earthquake Engineering*, V. 53(1), 1-12, DOI: <https://doi.org/10.5459/bnzsee.53.1.1-12>.
- Luque, R., and Bray, J.D. (2020) "Dynamic Soil-Structure Interaction Analyses of Two Important Structures Affected by Liquefaction during the Canterbury Earthquake Sequence," *Soil Dynamics and Earthquake Engineering J.*, V. 133, June, <https://doi.org/10.1016/j.soildyn.2019.106026>.
- Dhakal, R., Cubrinovski, M., and Bray, J.D. (2020) "Geotechnical Characterization and Liquefaction Evaluation of Gravelly Reclamations and Hydraulic Fills (Port of Wellington, New Zealand)," *Soils and Foundations*, V. 60, 1507-1531, <https://doi.org/10.1016/j.sandf.2020.10.001>.

Bray, J.D., and Macedo, J. (2021) "Closure to 'Procedure for Estimating Shear-Induced Seismic Slope Displacement for Shallow Crustal Earthquakes,'" *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002143](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002143).

Cappellaro, C., Cubrinovski, M., Bray, J.D., Chiaro, G., Riemer, M.F., and Stringer, M.E. (2021) "Liquefaction Resistance of Christchurch Sandy Soils from Direct Simple Shear Tests, *Soil Dynamics and Earthquake Engineering J.*, V. 141, <https://doi.org/10.1016/j.soildyn.2020.106489>.

Hutabarat, D., and Bray J.D. (2021) "Effective Stress Analysis of Liquefiable Sites to Estimate the Severity of Sediment Ejecta," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 147(5), 10.1061/(ASCE)GT.1943-5606.0002503.

Mijic, Z., Bray, J.D., Riemer, M.F., Cubrinovski, M., and Rees, S.D. (2021) "Test Method for Minimum and Maximum Densities of Small Quantities of Soil," *Soils and Foundations*, V. 61, 533-540, 10.1016/j.sandf.2020.12.003.

Hutabarat, D., and Bray J.D. (2021) "Seismic Response Characteristics of Liquefiable Sites with and without Sediment Ejecta Manifestation," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 147(6), 10.1061/(ASCE)GT.1943-5606.0002506.

Mijic, Z., Bray, J.D., Riemer, M.F., Rees, S.D., and Cubrinovski, M. (2021) "Cyclic and Monotonic Simple Shear Testing of Native Christchurch Silty Soil," *Soil Dynamics and Earthquake Engineering J.*, V. 148, 10.1016/j.soildyn.2021.106834.

Garcia, F.E., and Bray J.D. (2022) "Discrete Element Analysis of Earthquake Surface Fault Rupture through Layered Media," *Soil Dynamics and Earthquake Engineering J.*, V. 152, 107021, [doi.org/10.1016/j.soildyn.2021.107021](https://doi.org/10.1016/j.soildyn.2021.107021).

Hutabarat, D., and Bray J.D. (2022) "Estimating the Severity of Liquefaction Ejecta using the Cone Penetration Test," *J. of Geotechnical and Geoenvironmental Engineering*, ASCE, V. 148(3), 10.1061/(ASCE)GT.1943-5606.0002744.

## CONFERENCES

R. B. Seed, J. D. Bray, R. W. Boulanger and H. B. Seed, "Seismic Response of the Puddingstone and Cogswell Dams in the 1987 Whittier Narrows Earthquake", Proceedings, CSMIP89 Seminar on Seismological and Engineering Implications of Recent Strong-Motion Data, Sacramento, Calif., pp. 7-1 through 7-10, May 9, 1989.

J. D. Bray, R. B. Seed and H. B. Seed, "Modeling and Analysis of Base Rock Fault Rupture Propagation through Overlying Cohesive Soils", Proceedings of the Fourth U.S. National Conference on Earthquake Engineering, Palm Springs, California, pp. 713-722, May 20-24, 1990.

J. D. Bray, J. L. Chameau and S. Guha, "Seismic Response of Deep Stiff Clay Deposits", Proceedings of the First Canadian Symposium on Geotechnique and Natural Hazards, Vancouver, B.C., pp. 167-174, May 6-9, 1992.

J. D. Bray, R. W. Boulanger, S. H. Chew and R. B. Seed, "Finite Element Analysis in Geotechnical Engineering", Proceedings of the Eighth Conference on Computing in Civil Engineering, Dallas, pp. 410-417, June 10-12, 1992.

J. D. Bray, R. B. Seed and H. B. Seed, "On the Response of Earth Dams Subjected to Fault Rupture", Proceedings, Stability and Performance of Slopes and Embankments - II, Berkeley, California, pp. 608-624, June 29-July 1, 1992.

P. C. Repetto and J. D. Bray, "Considerations for Seismic Analysis of Landfills", Proceedings of the Technical Committee on Foundation Performance during Earthquakes and its Influence on Building Codes, sponsored by the International Society for Soil Mechanics and Foundation Engineering, Mexico City, August 20-21, 1992, 18 pp.

P. C. Repetto, J. D. Bray, R. J. Byrne and A. J. Augello, "Applicability of Wave Propagation Methods to the Seismic Analysis of Landfills", Proceedings, WasteTech '93, National Solid Wastes Management Association, Marina Del Rey, California, January 14-15, 1993, 26 pp.

- P. C. Repetto, J. D. Bray, R. J. Byrne and A. J. Augello, "Seismic Design of Landfills", Proceedings, 13th Central Pennsylvania Geotechnical Seminar, Pennsylvania Department of Transportation and American Society of Civil Engineers, April 12-14, 1993, 32 pp.
- J. D. Bray, A. Ashmawy, G. Mukhopadhyay and E. M. Gath, "Use of Geosynthetics to Mitigate Earthquake Fault Rupture Propagation Through Compacted Fill", Proceedings of the Geosynthetics '93 Conference, Volume 1, pp. 379-392, Mar. 30 - Apr. 1, 1993.
- D. Chandra, G. C. Lay, P. L. Thielen and J. D. Bray, "Geogrid Reinforcement for Massive Shear Key Applications", Proceedings of the Geosynthetics '93 Conference, [Bray's name not included in conference proceedings], Volume 1, pp. 245-254, Mar. 30-Apr. 1, 1993.
- R. W. Boulanger, J. D. Bray, S. M. Merry and L. H. Mejia, "Dynamic Response Analyses of Cogswell Dam During the 1991 Sierra Madre and 1987 Whittier Narrows Earthquakes", Proceedings, SMIP93 Seminar on Seismological and Engineering Implications of Recent Strong-Motion Data, pp. 91-104, May 20, 1993.
- J. D. Bray, R. Deschamps, S. Parkison and A. Augello, "Braced Excavation at the NIPSCO Bailly Station Power Plant", Proceedings of the Third International Conference on Case Histories in Geotechnical Engineering, Vol. II, pp. 765-774, June 1-4, 1993.
- R. W. Boulanger, J. D. Bray and R. B. Seed, "Response of Two Dams in the 1987 Whittier Narrows Earthquake", Proceedings of the Third International Conference on Case Histories in Geotechnical Engineering, Vol. I, pp. 635-642, June 1-4, 1993.
- J. I. Sun, S. W. Chang, J. D. Bray and L. H. Mejia, "Damage Patterns/Response of Deep, Stiff Clay Deposits in Oakland", Proceedings of the Third International Conference on Case Histories in Geotechnical Engineering, Vol. III, pp. 1611-1616, June 1-4, 1993.
- J. D. Bray, "Developments in Geotechnical Earthquake Engineering", Report of the Proceedings of the U.S. - Spain Workshop on Natural Hazards, Barcelona, Spain, J. Corominas and K. P. Georgakakos, eds., Iowa Institute of Hydraulic Research, Iowa City, Iowa, pp. 343-361, June 8-11, 1993. [Invited Publication]
- J. D. Bray, P. C. Repetto, A. J. Augello, and R. J. Byrne, "An Overview of Seismic Design Issues for Solid Waste Landfills", Proceedings, Geosynthetics Research Institute Conference #7, Drexel University, Philadelphia, Pennsylvania, pp. 242-254, December 14, 1993.
- D. L. Eggert, H. Al-Shakuri, N. K. Bleuer, J. D. Bray, S. W. Chang, W. R. Eckhoff, K. Kayabali, C. A. Munson, P. J. Munson, A. C. Samuelson, and T. R. West, "Seismic Hazards in Indiana: What We Have Learned", Proceedings of the Fifth U.S. National Conference on Earthquake Engineering, Chicago, Illinois, Vol. III, pp. 429-442, July 10-14, 1994.
- S.M. Merry, J.D. Bray and P.L. Bourdeau, "Stress-Strain Compatibility of Geomembranes Subjected to Subsidence," Proceedings of the Geosynthetics '95 Conference, Vol. 2, pp.799-811, February 1995.
- J.K. Mitchell, J.D. Bray and R.A. Mitchell, "Material Interactions in Solid Waste Landfills," Proceedings of the Geoenvironment 2000 Conference, American Society of Civil Engineers, Vol. 1, pp. 568-590, February 1995.
- A.J. Augello, J.D. Bray, G.A. Leonards, P.C. Repetto and R.J. Byrne, "Response of Landfills to Seismic Loading," Proceedings of the Geoenvironment 2000 Conference, American Society of Civil Engineers, Vol. 2, pp. 1051-1065, February 1995.
- Lazarte, C.A. and Bray, J.D. "Observed Surface Breakage due to Strike-Slip Faulting", Third International Conference on Recent Advances in Geotechnical Engineering and Soil Dynamics, St. Louis, MO, Vol. II, pp. 635-640, April 2-7, 1995.
- McMahon, D.J., Stewart, J.P., Kropp, A.L. and Bray, J.D. "The Performance of Hillside Fills During the Northridge Earthquake," Third International Conference on Recent Advances in Geotechnical Engineering and Soil Dynamics, St. Louis, MO, Vol. III, pp. 171-177, April 2-7, 1995.
- Chang, S.W., Bray, J.D., and Seed R.B. "Ground Motions from the Northridge Earthquake," Third International Conference on

Recent Advances in Geotechnical Engineering and Soil Dynamics, St. Louis, MO, Vol. III, pp. 205-213, April 2-7, 1995.

Augello, A.J., Bray, J.D., Matasovic, N., Kavazanjian, E. and Seed, R.B. "Solid Waste Landfill Performance During the 1994 Northridge Earthquake," Third International Conference on Recent Advances in Geotechnical Engineering and Soil Dynamics, St. Louis, MO, Vol. III, pp. 163-169, April 2-7, 1995.

Espinoza, R.D. and Bray, J.D. "SLOPAS: A New Computer Program for Generalized Slope Stability Analysis," Proceedings of the Second Congress on Computing in Civil Engineering, ASCE, Mohsen, J.P., ed., Atlanta, GA, Vol. 1, pp. 637-644, June 5-8, 1995.

Espinoza, R.D., Bray, J.D., Taylor, R.L., and Soga, K. "GeoFEAP for Geotechnical Engineering Analysis," Proceedings of the Second Congress on Computing in Civil Engineering, ASCE, Mohsen, J.P., ed., Atlanta, GA, Vol. 1, pp. 804-811, June 5-8, 1995.

Stewart, J.P., Bray, J.D., McMahon, D.J., and Kropp, A.L. "Seismic Performance of Hillside Fills," in Landslides Under Static and Dynamic Conditions - Analysis, Monitoring, and Mitigation, ASCE Geotechnical Special Publication No. 52, D.K. Keefer and C.L. Ho, eds., Proc., ASCE Annual Convention, San Diego, CA, pp. 76-95, 1995.

Augello, A.J., Matasovic, N., Bray, J.D., Kavazanjian, Jr., E., and Seed, R.B. "Evaluation of Solid Waste Landfill Performance During the Northridge Earthquake," in Earthquake Design and Performance of Solid Waste Landfills, ASCE Geotechnical Special Publication No. 54, M. K. Yegian and W.D.L. Finn, eds., Proc., ASCE Annual Convention, San Diego, CA, pp. 17-50, 1995.

Thomas, P. A., Bray, J. D., and Ke, T-C. "Discontinuous Deformation Analysis for Soil Mechanics," in Discontinuous Deformation Analysis (DDA) and Simulations of Discontinuous Media, Salami, M.R. and Banks, D., eds., TSI Press, pp. 454-461, June 1996.

Pestana, J.M., D'Orazio, T.B., Espinoza, R.D., Bray, J.D., Hunt, C.E., Lok, T.M., and Marstall, K. "Stress and Deformation Analysis of La Esperanza Dam Using GeoFEAP and CONSWELL," in IV International Benchmark Workshop on Numerical Analysis of Dams, ICOLD, Madrid, Spain, Theme B2, 14 pp., September 25-27, 1996.

Kavazanjian, Jr., E., Matasovic, N., Stokoe, K. H., and Bray, J. D. "In Situ Shear Wave Velocity of Solid Waste from Surface Wave Measurements," Proceedings of the Second International Congress on Environmental Geotechnics, Osaka, Japan, Vol. 1, pp. 97-102, November 5-8, 1996.

Merry, S.M. and Bray, J.D. "Temperature-Dependent Multi-Axial Creep Response of HDPE Geomembranes," Proceedings of the Geosynthetics '97 Conference, Vol. 1, pp. 163-176, March 10-13, 1997.

Seed, R. B., Chang, S. W., Dickenson, S. E., and Bray, J. D. "Site-Dependent Seismic Response Including Recent Strong Motion Data," in Seismic Behaviour of Ground and Geotechnical Structures, Seco e Pinto, P. S., ed., Proc. of Spec. Session on Earthquake Geotechnical Engineering, XIV International Conf. On Soil Mechanics and Foundation Engineering, Hamburg, Germany, A.A. Balkema, pp. 125-134, Sept. 6-12, 1997.

Stewart, J.P., Bray, J.D., McMahon, D.J., and Kropp, A.L. "Structural Fill Performance During the 1994 Northridge Earthquake," Proc., NEHRP Conference and Workshop on Research on the Northridge, California Earthquake of January 17, 1994, Calif. Univ. for Research in Earthquake Engineering, Los Angeles, CA, pp. II-173 through II-180, 1998.

Augello, A.J., Bray, J.D., Seed, R.B., Matasovic, N., and Kavazanjian, Jr., E. "Performance of Solid-Waste Landfill During the Northridge Earthquake," Proc., NEHRP Conference and Workshop on Research on the Northridge, California Earthquake of January 17, 1994, California Universities for Research in Earthquake Engineering, Los Angeles, CA, pp. II-71 through II-80, 1998.

Chang, S.W. and Bray, J.D. "Implications of Recent Strong Motion Data for Seismic Building Code Design at Deep, Stiff Soil Sites," Proc., NEHRP Conference and Workshop on Research on the Northridge, California Earthquake of January 17, 1994, Calif. Univ. for Research in Earthquake Engineering, Los Angeles, CA, pp. II-90 through II-99, 1998.

- Wartman, J., Rathje, E. M., Bray, J. D., Riemer, M.F., and Seed, R. B. "Shaking Table-Based Evaluation of the Newmark Procedure for Estimating Seismically Induced Slope Deformations," Proc., The 5<sup>th</sup> Caltrans Seismic Research Workshop, Caltrans, Sacramento, CA, June 16-18, 1998.
- Riemer, M. F., Gookin, W. B., Bray, J. D., and Wartman, J. "Using Reflected Shear Waves to Measure Small Strain Dynamic Properties," Proc., The 5<sup>th</sup> Caltrans Seismic Research Workshop, Caltrans, Sacramento, CA, June 16-18, 1998.
- Hunt, C. E., Pestana, J. M. and Bray, J. D. "Effect of Pile Installation on the Shear Wave Velocity of a Soft Clay Deposit," Proc., The 5<sup>th</sup> Caltrans Seismic Research Workshop, Caltrans, Sacramento, CA, June 16-18, 1998.
- Wartman, J., Riemer, M.F., Bray, J. D., and Seed, R. B. "Newmark Analyses of a Shaking Table Slope Stability Experiment," Proc., Geotechnical Earthquake Engineering and Soil Dynamics III, ASCE, Geotechnical Special Publication No. 75, Dakoulas, Yegian and Holtz, eds., Seattle, WA, pp. 778-789, August 3-6, 1998.
- Bray, J. D., Riemer, M. F., Gookin, W. B., "On the Dynamic Characterization of Soils," Proc., 2nd Inter. Conf. On Earthquake Geotechnical Engineering, ISSMFE, Seco e Pinto, ed., Balkema, Lisbon, Portugal, Vol. 3, pp. 847-856, June 21-25, 1999. [Invited Publication]
- Rathje, E. M. and Bray, J. D., "Two Dimensional Seismic Response of Solid-Waste Landfills," Proc., 2nd Inter. Conf. On Earthquake Geotechnical Engineering, ISSMFE, Seco e Pinto, ed., Balkema, Lisbon, Portugal, Vol. 2, pp. 655-660, June 21-25, 1999.
- Wartman, J, Seed, R.B., Bray, J.D., Riemer, M.F., and Rathje, E.M., "Laboratory Evaluation of the Newmark Procedure for Assessing Seismically-Induced Slope Deformations," Proc., 2nd Inter. Conf. On Earthquake Geotechnical Engineering, ISSMFE, Seco e Pinto, ed., Balkema, Lisbon, Portugal, Vol. 2, pp. 673-678, June 21-25, 1999.
- Rodriguez-Marek, A., Bray, J. D., and Abrahamson, N. A., "Empirically Based Geotechnical Seismic Site Classification," Proceedings of the 5<sup>th</sup> U. S. Conference on Lifeline Earthquake Engineering, Seattle, WA, August 1999.
- Rodriguez-Marek, A., Bray, J. D., and Abrahamson, N. A., "A Geotechnical Seismic Site Response Evaluation Procedure," Proc. of the 12<sup>th</sup> World Conference on Earthquake Engineering, Auckland, New Zealand, Paper 1590, 8 pp., Feb. 2000.
- Hunt, C. E., Pestana, J. M., Bray, J.D., and Riemer, M.F., "Effect of Pile Installation on Static and Dynamic Properties of Soft Clays," Proceedings of the GeoDenver 2000 Conference, ASCE, Denver, CO, August 3-6, 2000.
- Whang, D., Riemer, M.F., Bray, J.D., Stewart, J.P., and Smith, P.M., "Characterization of Seismic-Compression of Some Compacted Fills," Proceedings of the GeoDenver 2000 Conference, ASCE, Denver, CO, August 3-6, 2000.
- Durgunoglu, H. T., Sancio, R.B., Bray J.D., Karadayilar, T., and Onalp, A., "Sivilasmis Zeminlerde Zemin Davranisi Modellemesinde Kullanilan Zemin Arastirma Yontemleri-Adapazari Ornegi," Zemin Mekanigi ve Temel Muhendisligi Sekizinci Ulusal Kongresi, Istanbul Technical University, Istanbul, Turkey, August 26-27, 2000.
- Durgunoglu, H. T., Karadayilar, T., Bray J.D., Sancio, R.B., and Hacialioglu, E., "Sismik Statik Penetrasyon Deneyi (SCPT) Ile Geoteknik-Geoklinik Zemin Profili," Zemin Mekanigi ve Temel Muhendisligi Sekizinci Ulusal Kongresi, Istanbul Technical University, Istanbul, Turkey, August 26-27, 2000.
- Bray, J.D. and Rodriguez-Marek, A. "Near-Fault Seismic Site Effects," Proceedings, US-Japan Workshop on Near-Field Earthquake Shaking, PEER-2000/02 Report, Pacific Earthquake Engineering Research Center, Berkeley, CA, March 20-21, 2000 [Invited Paper].
- Bray, J. D. "Developing Mitigation Measures for the Hazards Associated with Earthquake Surface Fault Rupture," in A Workshop on *Seismic Fault-Induced Failures – Possible Remedies for Damage to Urban Facilities*, Research Project 2000 Grant-in-Aid for Scientific Research (No. 12355020), Japan Society for the Promotion of Science, Workshop Leader, Kazuo Konagai, University of Tokyo, Japan, pp. 55-79, January 11-12, 2001 [Invited Paper].
- Bray, J. D., Fang, Y.S., Tani, S., Yang, H.W., Hyodo, M., and Lew, M. "General Report - Session X: Case Histories of

Geotechnical Earthquake Engineering, Failures, and Geotechnical Analysis of Recent Earthquakes" in Proc., Fourth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, March 26-31, 2001. [Invited Paper]

Sancio, R. B., Pestana, J.M., Mayoral, J.M., Moss, R., Seed, R.B., and Bray, J.D. "Attenuation of Peak Ground Acceleration with Distance of the June 15, 1999 Tehuacan, Mexico Earthquake," in Proc., Fourth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, March 26-31, 2001.

Wartman, J., Bray, J.D., and Seed, R.B. "Shaking Table Experiment of a Model Slope Subjected to Two Ground Motions," in Proc., Fourth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, March 26-31, 2001.

O'Sullivan, C. and Bray J. D. "A Comparative Evaluation of Two Approaches to Discrete Element Modeling of Particulate Media," Proceedings of the Fourth International Conference on Discontinuous Deformation, Bicanic, N. (ed.), University of Glasgow, Scotland, UK, pp. 97-110, June 2001.

Bray, J. D., R. B. Sancio, H.T. Durgunoglu, A. Onalp, R. B. Seed, J. P. Stewart, T. L. Youd, M. B. Baturay, K.O. Cetin, C. Christensen, T. Karadayilar, and C. Emrem "Ground Failure In Adapazari, Turkey," in Proc., Earthquake Geotechnical Engineering Satellite Conference of the XVth International Conference on Soil Mechanics & Geotechnical Engineering, Istanbul, Turkey, August 24-25, 2001.

O'Sullivan, C., J.D. Bray, and M.F. Riemer, "3-D DEM Validation using Steel Balls with Regular Packing Arrangements", *Proceedings of the Third International Conference on Discrete Element Methods: Numerical Modelling of Discontinua*, ASCE Geotechnical Special Publication No. 117, 2002.

O'Sullivan, C. and Bray, J.D., "Relating the Response of Idealized Analogue Particles and Real Sands", *Proceedings of the Numerical Modeling in Micro-mechanics via Particle Methods*, First International PFC Symposium, Nov. 2002.

Travasrou, T., and Bray, J.D. "Optimal Ground Motion Intensity Measures for Assessment of Seismic Slope Displacements," *2003 Pacific Conference on Earthquake Engineering*, Christchurch, New Zealand, Feb. 2003.

Sancio, R.B., Bray, J.D., Riemer, M.F. and Durgunoglu, T. "An assessment of the liquefaction susceptibility of Adapazari silt," *2003 Pacific Conference on Earthquake Engineering*, Christchurch, New Zealand, Feb. 2003.

Travasrou, T., and Bray, J.D. "Probabilistically-Based Estimates of Seismic Slope Displacements," Proceedings of the Ninth International Conference on Applications of Statistics and Probability in Civil Engineering, San Francisco, CA, July 6-9, 2003.

O'Sullivan, C. and Bray, J.D. "Evolution of Localizations in Idealized Granular Materials" *Quasi-Static Deformations of Particulate Materials*, Proc. of the QuaDPM'03 Workshop, Bagi, K., ed., Budapest, Aug 25 - 28, 2003, pp. 195-202.

O'Sullivan, C. and Bray, J.D. "Methods to Calculate Strain in Discrete Element Modeling" *Deformation Characteristics of Geomaterials*, LYON September 22 - 24, 2003.

Bray, J.D., Sancio, R.B., Riemer, M.F. and Durgunoglu, T. "Liquefaction Susceptibility of Fine-Grained Soils," *Proc. 11<sup>th</sup> Inter. Conf. On Soil Dynamics and Earthquake Engineering and 3<sup>rd</sup> Inter. Conf. On Earthquake Geotechnical Engineering*, Doolin, Kammerer, Nogami, Seed and Towhata, Eds., Berkeley, CA, Jan. 7-9, 2004, V.1, pp. 655-662.

Koragappa, N., Bray, J.D., Meyer, D., and Travasarou, T. "Seismic Slope Stability of a Landfill on Young Bay Mud," Proc. Waste Tech Landfill Technology Conference, Dallas, Texas, May 17-19, 2004.

Sancio, R., Bray, J.D., Durgunoglu, T., and Onalp, A. "Performance of Buildings over Liquefiable Ground in Adapazari, Turkey," 13<sup>th</sup> World Conference on Earthquake Engineering, Vancouver, Canada, Paper No. 935, Aug 1-6, 2004.

Travasrou, T., Bray, J.D., and Der Kiureghian, A.D. "A Probabilistic Methodology for Assessing Seismic Slope Displacements," 13<sup>th</sup> World Conference on Earthquake Engineering, Vancouver, Canada, Paper No. 2326, Aug 1-6, 2004.

- Bird, J.F., Sancio, R., Bray, J.D., and Bommer, J. "The Ground Failure Component of Earthquake Loss Estimations: A Case Study of Adapazari, Turkey," 13<sup>th</sup> World Conference on Earthquake Engineering, Vancouver, Canada, Paper No. 803, Aug 1-6, 2004.
- Zekkos, D.P., Bray, J.D., and Der Kiureghian, A. "Reliability of Shallow Foundation Design Using the Standard Penetration Test," Proc. ISC-2 on Geotech. and Geophysical Site Characterization, Viana da Fonseca & Mayne, Eds., Millpress, Rotterdam, Sept. 2004, pp. 1575-1582.
- Zekkos, D.P., Bray, J.D., Kavazanjian, E., Matasovic, N., Rathje, E., Riemer, M., and Stokoe II, K.H. "A Framework for the Estimation of MSW Unit Weight Profile," Sardina 2005, 10<sup>th</sup> Intl. Waste Man.. & Landfill Sym., Italy, Oct 2005.
- Travasarou, T., and Bray, J.D. "Insights from Soil Structure Interaction Analyses of Buildings in Adapazari, Turkey," in Proc., 1<sup>st</sup> Greece-Japan Workshop, G. Gazetas, Y. Goto, and T. Tazoh, Eds., Athens, Oct. 11-12, 2005.
- O'Sullivan, C., Bray, J.D. and Cui, L. "Experimental Validation of Particle-Based Discrete Element Methods" Proc. GeoCongress 2006, ASCE, DeGroot, D.J., DeJong, J.T., Frost, J.D., and Baise, L.G., Eds., Atlanta, Georgia, Feb. 26-March 1, 2006.
- Theodoratos, A., Athanasopoulos, G., Georgiopoulos, D., Zekkos, D., Bray, J., Riemer, M., "Laboratory Investigation of MSW Shear Strength in a Large Box Direct Shear Apparatus," in Proc. of 5<sup>th</sup> Hellenic Conference of Geotechnical and Geoenvironmental Engineering, Xanthi, 2006, Vol. 1, pp. 537-544 (in Greek).
- Chen, W.Y., Bray, J.D., and Seed, R.B. "Shaking Table Model Experiments to Assess Seismic Slope Deformation Analysis Procedures," Proc. 8<sup>th</sup> US Nat. Conf. EQ Engrg., 100<sup>th</sup> Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, EERI, April 2006, Paper 1322.
- Rodriguez-Marek, A. and Bray, J.D. "Site Effects for Near-Fault Forward-Directivity Motions," Proc. 8<sup>th</sup> US Nat. Conf. EQ Engrg., 100<sup>th</sup> Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, EERI, April 2006, Paper 1316.
- Zekkos, D.P., Bray, J.D., and Riemer, M.F. "Shear Modulus Reduction and Material Damping Relations for Municipal Solid-Waste," Proc. 8<sup>th</sup> US Nat. Conf. EQ Engrg., 100<sup>th</sup> Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, EERI, April 2006, Paper 1324.
- Travasarou, T., Bray, J.D., and Sancio, R.B. "Soil-Structure Interaction Analyses of Building Responses During the 1999 Kocaeli Earthquake," Proc. 8<sup>th</sup> US Nat. Conf. EQ Engrg., 100<sup>th</sup> Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, EERI, April 2006, Paper 1877.
- Vera-Grunauer, X., Bray, J.D., Pestana, J.M., Kayen, R., Tandazo, E., Ramirez, J., Vera-Grunauer, J.G., and Mera-Ortiz, W., "Site Characterization and Seismic Zonation of Guayaquil City, Ecuador," Proc. 8<sup>th</sup> US Nat. Conf. EQ Engrg., 100<sup>th</sup> Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake, EERI, April 2006, Paper 1467.
- Ledezma, C. and Bray, J.D., "A Probabilistic Design Procedure that Incorporates the Pile-Pinning Effect in Bridge Foundations Undergoing Liquefaction-Induced Lateral Spreading," Proc. 5<sup>th</sup> Nat. Seismic Conf. on Bridges & Highways, San Francisco, CA, Sept. 18-20, 2006.
- Bray, J.D., and Rodriguez-Marek, A.M., "Design Ground Motions Near Active Faults," Proc. Earthquake Geotechnical Engineering Workshop, University of Canterbury, Christchurch, New Zealand, Nov. 20-23, 2006 (INVITED).
- Donahue, J.L., Bray, J.D., and Riemer, M.F. "Liquefaction Testing of Fine-Grained Soil Prepared Using Slurry Deposition," Proc. 4<sup>th</sup> Inter. Conf. Earthquake Geotechnical Engineering, Paper No. 1226, June 25-28, 2007.
- Bray, J.D. and Ledezma, C. "Evaluating Seismic Displacements and Damage for Pile Foundations undergoing Liquefaction-Induced Lateral Spreading," Proc. 4<sup>th</sup> Inter. Conf. Earthquake Geotechnical Engineering, Paper No. 1460, June 25-28, 2007.

Zekkos, D.P., Bray, J.D., Athanasopoulos, G.A, Riemer, M., Kavazanjian, E., Founta, P.A., and Grizi, A.F. "Compositional and loading rate effects on the shear strength of municipal solid waste," Proc. 4<sup>th</sup> Inter. Conf. Earthquake Geotechnical Engineering, Paper No. 1525, June 25-28, 2007.

Choudhury, D., Basu, S., and Bray, J. D., "Behaviour of Slopes Under Static and Seismic Conditions by Limit Equilibrium Method," ASCE GSP 161 Embankments, Dams, and Slopes, Geo-Denver 2007.

Seed, R.B., Bea, R.G., Athanasopoulos-Zekkos, A., Boutwell, G.P., Bray, J.D., Cheung, C., Cobos-Roa, D., Ehrensing, L., Harder, Jr., L.F., Pestana, J.M., Riemer, M.F., Rogers, J.D., Storesund, R., Vera-Grunauer, X, and Wartman, J. "Investigation of Levee Performance in Hurricane Katrina: The Inner Harbor Navigation Channel," ASCE GSP 161 Embankments, Dams, and Slopes, Geo-Denver 2007.

Seed, R.B., Bea, R.G., Athanasopoulos-Zekkos, A., Boutwell, G.P., Bray, J.D., Cheung, C., Cobos-Roa, D., Ehrensing, L., Harder, Jr., L.F., Pestana, J.M., Riemer, M.F., Rogers, J.D., Storesund, R., Vera-Grunauer, X, and Wartman, J. "Investigation of Levee Performance in Hurricane Katrina: The New Orleans Drainage Canals," ASCE GSP 161 Embankments, Dams, and Slopes, Geo-Denver 2007.

Seed, R.B., Bea, R.G., Abdelmalak, R.I., Athanasopoulos-Zekkos, A., Boutwell, G.P., Bray, J.D., Briaud, J.-L., Cheung, C., Cohen-Waeber, B.D., Collins, D., Cobos-Roa, D., Farber, D., Hanenmann, M., Harder, Jr., Inkabi, K.S., Kammerer, A.M., Karadeniz, D., Kayen, R.E., Moss, R.E.S., Nicks, J., Nimala, S., L.F., Pestana, J.M., Porter, J., Rhee, K., Riemer, M.F., Roberts, K., Rogers, J.D., Storesund, R., Govindasamy, A.V., Vera-Grunauer, X, Wartman, J., Watkins, C.M., Wenk, E., and Yim, S. "Investigation of the Performance of the New Orleans Regional Flood Protection Systems during Hurricane Katrina: Lessons Learned," ASCE GSP 161 Embankments, Dams, and Slopes, Geo-Denver 2007.

Ledezma, C. and Bray, J.D. "Probabilistic design procedure that includes pile-pinning for bridge foundations undergoing liquefaction-induced lateral spreading," Proc. of the 13th PanAmerican Conference on Soil Mechanics and Geotechnical Engineering, Isla de Margarita, Venezuela, July 15-19, 2007, pp 136-142.

Zekkos, D.P., Bray, J.D., Riemer, M., Kavazanjian, E., and Athanasopoulos, G.A. "Response of Municipal Solid-Waste from Tri-Cities Landfill in Triaxial Compression," Sardina 2007, 11<sup>th</sup> Intl. Waste Man. & Landfill Sym., Italy, Oct 2007.

Zekkos, D.P., Bray, J.D., Stokoe II, K.H., Kavazanjian, E., Rathje, E., Athanasopoulos, G.A, Riemer, M., Matasovic, N., Lee, J.J., and Seos, B. "Recent Findings on the Static and Dynamic Properties of Municipal Solid Waste," Geotechnics of Waste Management and Remediation, Gecongress 2008, ASCE Spec. Pub. No. 177, Edited by Khire, M.V., Alshawabkeh, A.N., and Reddy, K.R., March 2008, pp. 176-183.

Bray, J.D., Zekkos, D., and Merry, S.M. "Shear Strength of Municipal Solid Waste," Proc. 2008 Inter. Sym. on Waste Mechanics, Geotechnical Characterization, Field Measurement, and Laboratory Testing of Municipal Solid Waste, ASCE Geotech. Spec. Pub. No. 209, Edited by D. Zekkos, 2008, pp. 44-75.

Bray, J.D. and Zekkos, D. "Research Needs in Soil Waste Mechanics," Proc. 2008 Inter. Sym. on Waste Mechanics, Geotechnical Characterization, Field Measurement, and Laboratory Testing of Municipal Solid Waste, ASCE Geotech. Spec. Pub. No. 209, Edited by D. Zekkos, 2008, pp. 228-234.

Dashti, S., J.D. Bray, M.F. Riemer, D. Wilson, "Centrifuge Experimentation of Building Performance on Liquefied Ground," Proc. Geotechnical Earthquake Engineering and Soil Dynamics IV, ASCE Geotechnical Special Publication No. 181, Zeng, D. et al., Ed., May 18-22, 2008, Sacramento, CA.

Ledezma, C. and Bray, J.D. "Factors that Affect the Performance of Bridge Foundations Undergoing Liquefaction-Induced Lateral Spreading," Proc. Geotechnical Earthquake Engineering and Soil Dynamics IV, ASCE Geotechnical Special Publication No. 181, Zeng, D. et al., Ed., May 18-22, 2008, Sacramento, CA.

Bray, J.D. "Earthquake Surface Fault Rupture Design Considerations," Proc. Sixth Inter. Conf. on Urban Earthquake Engineering, Center for Urban EQ Engineering, Tokyo Institute of Tech., Tokyo, Japan, Mar 3-4, 2009, pp. 37-45 (Invited).

- Bray, J.D., "Learning from Geotechnical Earthquake Engineering Case Histories," Proc. International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Kokusho et al., Ed., IS-Tokyo 2009, June 15-18, 2009, pp. 277-281.
- Ledezma, C. and Bray, J.D. "Procedures for Evaluating Pile-Supported Bridges Affected by Liquefaction-Induced Lateral Ground Displacement," Proc. International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Kokusho et al., Ed., IS-Tokyo 2009, June 15-18, 2009, Paper No. 1615.
- Bray, J.D., "Designing Buildings to Accommodate Earthquake Surface Fault Rupture," Proc., ATC & SEI 2009 Conference on Improving the Seismic Performance of Existing and Other Structures, Dec. 2009, 1269-1280.
- Bray, J.D., and Dashti, S., "Liquefaction-Induced Movements of Buildings with Shallow Foundations," Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, May 24-29, 2010, San Diego, CA, Paper No. OSP-2 (Invited).
- Mason, H.B., Bray, J.D., Jones, K.C., Chen, Z-Q., Hutchinson, T.C., Trombetta, N.W., Choy, B.Y., Kutter, B.L., Fiegel, G.L., Montgomery, J., Patel, R.J., Reitherman, R., Bolisetti, C., and Whittaker, A.S., "Earthquake Input Motions and Seismic Site Response in a Centrifuge Test Examining SFSI Effects," Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, May 24-29, 2010, San Diego, CA, Paper No. 5.48a.
- Chen, Z-Q., Hutchinson, T.C., Trombetta, N.W., Mason, H.B., Bray, J.D., Jones, K.C., Bolisetti, C., Whittaker, A.S., Choy, B.Y., Kutter, B.L., Fiegel, G.L., Montgomery, J., Patel, R.J., and Reitherman, R., "Seismic Performance Assessment in Dense Urban Environments: Evaluation of Nonlinear Building-Foundation Systems using Centrifuge Tests," Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, May 24-29, 2010, San Diego, CA, Paper No. 5.49a.
- Mason, H. B., Z. Chen, K. C. Jones, N. W. Trombetta, J. D. Bray, T. C. Hutchinson, C. Bolisetti, A. S. Whittaker, B. Y. Choy, B. L. Kutter, and G. L. Fiegel, "Soil-Foundation-Structure Interaction Effects on Model Buildings within a Geotechnical Centrifuge," Proc., 9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering, EERI & CAEE, Toronto, Canada, July 25-29, 2010.
- Dashti, S., Bray, J.D., Pestana, J.M., Riemer, M., and Wilson, D., "Experimental Insight into Liquefaction-Induced Building Settlement," Proc., 9<sup>th</sup> US National and 10<sup>th</sup> Canadian Conference on Earthquake Engineering, EERI & CAEE, Toronto, Canada, July 25-29, 2010.
- Bray, J.D., Travararou, T., and Zupan, J., "Seismic Displacement Design of Earth Retaining Structures," Proc. 2010 Earth Retention Conf. 3, Finno, R.J. et al., Eds., ASCE Geotech. Spec. Publ. No. 209, Aug. 1-4, 2010, Seattle, WA, 638-655. [Invited Paper]
- Mason, H. B., B. L. Kutter, J. D. Bray, D. Wilson, and B. Y. Choy, "Earthquake motion selection and calibration for use in a geotechnical centrifuge," Proc., 7<sup>th</sup> Inter. Conf. on Physical Modelling in Geotechnics., Zurich 2010, September.
- Bray, J.D. and Travararou, T., "Pseudostatic Slope Stability Procedure," 5<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, Santiago, Chile, Jan. 10-13, 2011. [Invited Paper]
- Ledezma, C. and Bray, J.D., "Simplified Coupled Model for Seismic Performance Evaluation of Bridges Founded on Piles at Sites with Liquefaction-Induced Lateral Ground Displacement," 5<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, Santiago, Chile, Jan. 10-13, 2011.
- Shriro, M., Cobos-Roa, D., Bray, J.D., Sitar, N., Lichter, J., Evans, R., and Kroll, R., "Study of Levee Seepage and Slope Stability in Relation to Roots," Dam Safety 2011 Conference Proceedings, Association of State Dam Safety Officials, Washington D.C., Sept. 25-29, CD-ROM.
- Ervasti, M., Dashti, S., Reilly, J., Bray, J.D., Bayen, A., and Glaser, S., "iShake: Mobile Phones as Seismic Sensors – User Study Findings," 10<sup>th</sup> Inter. Conf. on Mobile and Ubiquitous Multimedia, *MUM'11*, Beijing, China, Dec. 7-9, 2011, V.28, pp. 43-52.

Mason, H. B., Jones, K. C., Zupan, J. D., Bray, J. D., Trombetta, N. W., Hutchinson, T. C., Chen, Z., Choy, B. Y., Puagnak, H., Kutter, B. L., Montgomery, J., Patel, R. J., Proto, C., Gille, S., Lund, J., Fiegel, G. L., Bolisetti, C., Whittaker, A. S., and Reitherman, R. "Examining structure-soil-structure interaction using dynamic centrifuge testing," In Proceedings of the NSF CMMI Research and Innovation Conference, 2011, Atlanta, Georgia.

Green, R.A., Cubrinovski, M., Wotherspoon, L., Allen, J., Bradley, B., Bradshaw, A., Bray, J., DePascale, G., Orense, R., O'Rourke, T., Pender, M., Rix, G., Wells, D., Wood, C., Henderson, D., Hogan, L., Kailey, P., Robinson, K., Taylor, M., and Winkley, A., "Geotechnical Aspects of the Mw6.2 2011 Christchurch, New Zealand Earthquake," *State of the Art and Practice in Geotechnical Engineering* (R. Hryciw, A. Athanasopoulos-Zekkos, and N. Yesiller, eds.), ASCE Geotechnical Special Publication (GSP) 225, GeoCongress 2012, 1700-1709.

Cobos Roa, D., Shriro, M., Sitar, N., Bray, J., Bawden, G., Lichter, J., and Evans, R., "3-D Stratigraphy and Root Geometry From Trench and Ground-Based Lidar Mapping," *State of the Art and Practice in Geotechnical Engineering* (R. Hryciw, A. Athanasopoulos-Zekkos, and N. Yesiller, eds.), ASCE Geotechnical Special Publication (GSP) 225, GeoCongress 2012.

Dashti, S. and Bray, J.D., "Numerical Insights into Liquefaction-Induced Building Settlement," *State of the Art and Practice in Geotechnical Engineering* (R. Hryciw, A. Athanasopoulos-Zekkos, and N. Yesiller, eds.), ASCE Geotechnical Special Publication (GSP) 225, GeoCongress 2012.

Puangnak, H., Choy, B., Mason, H. B., Kutter, B. L., and Bray, J., "Constructive and Destructive Footing-Soil-Footing Interaction for Vertically Vibrating Footings," *State of the Art and Practice in Geotechnical Engineering* (R. Hryciw, A. Athanasopoulos-Zekkos, and N. Yesiller, eds.), ASCE Geotechnical Special Publication (GSP) 225, GeoCongress 2012.

Oettle, N.K., and Bray, J.D. "Soil Shearing during Earthquake Surface Fault Rupture," Proceedings of the 15th World Conference on Earthquake Engineering, Lisbon, Portugal, Sept 2012, CD-ROM.

Trombetta, N.W., T. C. Hutchinson, Mason, H. B., J. Zupan, J. D. Bray, C. Bolisetti, A. S. Whittaker, Z. Chen, and B.L. Kutter, "Centrifuge Modeling of Structure-Soil-Structure Interaction: Seismic Performance of Inelastic Building Models," Proceedings of the 15th World Conference on Earthquake Engineering, Lisbon, Portugal, Sept, 2012, CD-ROM.

Haselton, C.B., Whittaker, A.S., Hortacsu, A., Baker, J.W., Bray, J. and Grant, D.N. "Selecting and Scaling Earthquake Ground Motions for Performing Response-History Analyses," Proceedings of the 15th World Conference on Earthquake Engineering, Lisbon, Portugal, Sept 2012, CD-ROM.

Hayden, C.P., Bray, J.D. Bray, Abrahamson, N.A., and Acevedo-Cabrera, A.L. "Selection of Near-Pulse Motions for Use in Design," Proceedings of the 15th World Conference on Earthquake Engineering, Lisbon, Portugal, Sept 2012, CD-ROM.

Dashti, S., Bray, J.D., Reilly, J., Glaser, S., Bayen, A. "iShake: Reliability of Phones as Seismic Sensors," Proceedings of the 15th World Conference on Earthquake Engineering, Lisbon, Portugal, Sept 2012, CD-ROM.

Oettle, N.K., Bray, J.D., Konagai, K., and Kelson, K. "Surface Fault Rupture through a Ridge in an Aftershock of the 2011 Tohoku Earthquake," Proc. Geo-Congress 2013, ASCE, San Diego, March, pp. 1581-1584.

Shriro, M., and Bray, J.D., "Calibration of Numerical Model for Liquefaction-Induced Effects on Levees and Embankments," *Proc. Seventh Inter. Conf. on Case Histories in Geotechnical Engineering*, Chicago, Illinois, May 2013, Paper 1.14a

Bray, J.D., Frost, J.D., and Rathje, E.M., "Geotechnical Lessons Learned From Earthquakes," Proc. Seventh Inter. Conf. on Case Histories in Geotechnical Engineering, Chicago, Illinois, May, 2013, Paper SOAP-2.

Bray, J.D., Cubrinovski, M., Zupan, J., and Taylor, M. (2014) "Liquefaction Effects in the Central Business District of Christchurch," *Soil Liquefaction during Recent Large-Scale Earthquakes*, Orense, Towhata, & Chouw (Eds.), CRC Press/Balkema, Taylor & Francis Group, London, UK, Dec. 2-3, 2013, Auckland Univ., NZ, pp. 109-118.

Cubrinovski, M., Taylor, M., Henderson, D., Winkley, A., Haskell, J., Bradley, B.A., Hughes, M., Wotherspoon, L., Bray,

- J. and O'Rourke, T. (2014) "Key factors in the liquefaction-induced damage to buildings and infrastructure in Christchurch: Preliminary findings," Proc. of the 2014 New Zealand Society for Earthquake Engineering Annual Conference (NZSEE), Auckland, New Zealand, 21-23 Mar, 9 pp.
- Bray, J.D., Cubrinovski, M., Zupan, J., and Taylor, M. (2014) "CPT-Based Liquefaction Assessments in Christchurch, New Zealand, CPT'14: Third International Symposium on Cone Penetration Testing, Las Vegas, NV, May 13-14.
- Donahue, J.L., and Bray, J.D. (2014) "Seismic Displacements for the Downtown Anchorage Seismic Risk Assessment," Tenth U.S. National Conference on Earthquake Engineering, Frontiers of Earthquake Engineering, EERI, Anchorage, Alaska, July 21-25.
- Shriro, M., Cobos-Roa, D., Bray, J.D., and Sitar, N., "Effects of Woody Vegetation on Levee Integrity during Full Scale Testing at Twitchell Island in Rio Vista, California," Dam Safety 2014 Conference Proceedings, Association of State Dam Safety Officials, Sept. 21-25, 2014, San Diego, CA, CD-ROM.
- Bray, J.D. (2015) "Engineering Mitigation of Surface-Fault Rupture," Proceedings Volume - Basin and Range Province Seismic Hazards Summit III, Misc. Publ. 15-5, Utah Geological Survey, Ed. W.R. Lund, Salt Lake City, Utah, January 12-17.
- Bray, J.D., Rathje, E.M., and Frost, J.D. (2015) "Turning Disaster into Knowledge," Proc. 12<sup>th</sup> Australia New Zealand Conf. on Geomechanics (ANZ 2015), Wellington, NZ, February 22-25, Invited Keynote Paper.
- Bray, J.D., Markham, C.S., and Cubrinovski, M. (2015) "Liquefaction assessments in the Central Business District of Christchurch, New Zealand," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand, Invited Keynote Paper.
- Luque, R. and Bray, J.D., (2015) "Soil Structure Interaction (SSI) Dynamic Analysis of a Shallow Founded Building in Christchurch during the Canterbury Earthquake Sequence," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Stringer, M., Beyzaei, C., Cubrinovski, M., Bray, J.D., Riemer, M., Jacka, M.E., and Wentz, F.J. (2015) "Liquefaction Characteristics of Christchurch Silty Soils: Gainsborough Reserve," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Beyzaei, C., Bray, J.D., Cubrinovski, M., Riemer, M., Stringer, M., M., Jacka, M.E., and Wentz, F.J. (2015) "Liquefaction Resistance of Silty Soils at the Riccarton Road Site, Christchurch, New Zealand," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Markham, C.S., Bray, J.D., and Macedo, J. (2015) "Deconvolution of Surface Motions from the Canterbury Earthquake Sequence for use in Nonlinear Effective Stress Site Response Analyses," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Wagner, N., Bray, J.D., and Sitar, N. (2015) "Ground deformations in the very near fault region during the M6.0 South Napa Earthquake," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Stewart, J. P., Kramer, S. L., Kwak, D. Y., Greenfield, M. W., Kayen, R. E., Tokimatsu, K., Bray, J. D., Beyzaei, C. Z., Cubrinovski, M., Sekiguchi, T., Nakai, S. and Bozorgnia, Y. (2015) "PEER-NGL Project: Open Source Global Database and Model Development for the Next-Generation of Liquefaction Assessment Procedures," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Gingery, J., Elgamal, A., and Bray, J.D. (2015) "Liquefaction model calibration: element-level versus 1-D site response," Proc. of the 6<sup>th</sup> International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.
- Cohen-Waeber, J., Lanzafame, R., Bray, J.D., and Sitar, N. (2015) "The Performance of Structures Subjected to Surface

Fault Rupture during the Mw 6.0 South Napa Earthquake, California, USA,” Proc. of the 6th International Conference on Earthquake Geotechnical Engineering, 1-4 November, Christchurch, New Zealand.

Merani, J., Hunt, C.E., Donahue, J.L., and Bray, J.D. (2016) “CPT Interpretation in Highly Organic Soils and Soft Clay Soils,” Geo-Chicago 2016, GSP 273, ASCE, 412-421.

Luque, R., and Bray, J.D. (2017) “Dynamic Analysis of an Office Building Founded over a Buried Stream Deposit of Liquefiable Soils in Christchurch, NZ,” 16<sup>th</sup> World Conference on Earthquake Engineering, Santiago, Chile, Jan. 9-13, Paper No. 3563.

Macedo, J., Bray, J.D., and Travararou, T. (2017) “Simplified Procedure for Estimating Seismic Slope Displacements in Subduction Zones,” 16<sup>th</sup> World Conference on Earthquake Engineering, Santiago, Chile, Jan. 9-13, Paper No. 3563.

Bray, J.D., and Luque, R. (2017) “Insights through dynamic analysis of structures at liquefied sites,” Proc. New Zealand Society of Earthquake Engineering Annual Conference, Wellington, NZ, April 27-29.

Gingery, J.R., Lingwall, B.N., Foster, B.H., and Bray, J.D. (2017) “Case Study of the Performance Based Analysis and Design of Bridge Foundations Intersected by Active Faulting,” 3<sup>rd</sup> Inter. Conf. on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), Vancouver, Canada, July 16-20, Paper 397.

Bray, J.D., Macedo, J., and Luque, R. (2017) “Key Trends in Assessing Liquefaction-Induced Building Settlement,” 3<sup>rd</sup> Inter. Conf. on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), Vancouver, Canada, July 16-20, Paper 520.

Beyzaei, C.Z., Bray, J.D., van Ballegooy, S., Cubrinovski, M., and Bastin, S. (2017) “Swamp Depositional Environment Effects on Liquefaction Performance in Christchurch, New Zealand,” 3<sup>rd</sup> Inter. Conf. on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), Vancouver, Canada, July 16-20, Paper 169.

Macedo, J., Bray, J., Abrahamson, N., and Travararou, T. (2017) “Probabilistic Simplified Seismic Performance Assessment of Earth Slopes and Structures” 3<sup>rd</sup> Inter. Conf. on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), Vancouver, Canada, July 16-20, Paper 408.

Bray, J.D. and Macedo, J. (2017) “Simplified procedure for estimating liquefaction-induced building settlements,” Proc. 19<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering, Seoul, South Korea, Sept.

Garcia, F.E., and Bray, J.D. (2017) “Distinct Element Simulations of Shear Rupture in Boundary Displacement Problems,” 15th International Conference of the International Association for Computer Methods and Advances in Geomechanics (15th IACMAG), 19-23 October, Wuhan, China.

Bray, J.D., and Macedo, J. (2018) “Assessment of Liquefaction-Induced Building Settlement,” *Proceedings of the 2018 New Zealand Society of Earthquake Engineering Conference*, NZSEE, Auckland, NZ.

Bray, J.D., and Macedo, J. (2018) “Evaluating Liquefaction-Induced Building Settlements,” *Proceedings of the 11th National Conference in Earthquake Engineering*, Earthquake Engineering Research Institute, Los Angeles, CA.

Cubrinovski, M., Bray, J.D., and de la Torre, C. (2018) “Liquefaction of Reclaimed Land at Wellington Port in the 2016 Kaikoura Earthquake,” *Geotechnical Earthquake Engineering and Soil Dynamics V GSP 290*, ASCE, 357-373.

Cappellaro, C., Cubrinovski, M., Bray, J.D., Chiaro, G., Riemer, M.F., and Stringer, M.E. (2018) “Comparisons in the Cyclic Direct Simple Shear Response of Two Sands from Christchurch, New Zealand,” *Geotechnical Earthquake Engineering and Soil Dynamics V GSP 290*, ASCE, 150-159.

Bray, J.D., Frost, J.D., Rathje, E.R., and Garcia, F.E. (2018) “Turning Disaster into Knowledge in Geotechnical Earthquake Engineering,” *Geotechnical Earthquake Engineering and Soil Dynamics V GSP 290*, ASCE, 186-200.

Bray, J.D. and Macedo, J. (2018) “Simplified Evaluation of Liquefaction-Induced Building Settlements,” *Geotechnical*

Earthquake Engineering and Soil Dynamics V GSP 290, ASCE, 577-590.

Bray, J.D., Cubrinovski, M., de la Torre, C., Stocks, E., and Krall, T. (2018) "CPT-based liquefaction assessment of CentrePort Wellington after the 2016 Kaikoura earthquake," Proc. Cone Penetration Testing 2018, Hicks, Pisano & Peuchen, Eds., Delft Univ. of Technology, The Netherlands, ISBN 978-1-138-58449-5, 165-171.

Garcia, F.E., and Bray, J.D. (2018) "High-Performance Distinct Element Modeling of Free-Field Surface Fault Rupture," Proc. IS Atlanta 2018 Symposium on Geomechanics from Micro to Macro in Research and Practice, Atlanta, 7 pp.

Bray, J.D., Cubrinovski, M., Dhakal, R., and de la Torre, C. (2019) "Seismic Performance of CentrePort Wellington," Proc. Geo-Congress 2019, GSP 308, ASCE, 76-89.

Cappellaro, C., Cubrinovski, M., Chiaro, G., Stringer, M.E., Bray, J.D., and Riemer, M.F. (2019) "Liquefaction resistance of Christchurch sandy soil deposits obtained from cyclic direct simple shear tests and CPT-based methods," Proc. 13th Australia New Zealand Conference on Geomechanics, Perth, Western Australia.

Beyzaei, C.Z., Bray, J.D., Riemer, M.F., Cubrinovski, M. and Stringer, M.E. (2019) "Steady state testing of shallow alluvial Christchurch silty soils," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 1428-1436.

Bray, J.D. and Macedo, J. (2019) "Shear-induced seismic slope displacement estimates for shallow crustal earthquakes," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 1537-1544.

Cappellaro, C., Cubrinovski, M., Chiaro, G., Stringer, M.E., Bray, J.D., and Riemer, M.F. (2019) "Effects of fines content, fabric, and structure on the cyclic direct simple shear behaviour of silty sands," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 1588-1595.

Dhakal, R., Cubrinovski, M., de la Torre, C., and Bray, J.D. (2019) "Site characterization for liquefaction assessment of gravelly reclamations at CentrePort, Wellington," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 2102-2110.

Garcia, F.E. and Bray J.D. (2019) "Distinct element analysis of earthquake surface fault rupture through layered media," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 2542-2549.

Hutabarat, D. and Bray, J.D. (2019) "Effective stress analysis of liquefiable site in Christchurch to discern the characteristics of sediment ejecta," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 2923-2931.

Macedo, J., Abrahamson, N., and Bray, J.D. (2019) "Arias intensity models for subduction zone earthquakes," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, 3700-3707.

Bray, J.D., Frost, J.D., Rathje, E.M., and Garcia, F.E. (2019) "Earthquake geotechnical engineering reconnaissance methods and advances," *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions*, Silvestri & Moraci (Eds), Associazione Geotecnica Italiana, Rome, Italy, invited theme lecture paper, 777-790.

Garcia, F.E. and Bray, J.D. (2020) "DEM analysis of reverse fault rupture with rigid foundations," *Applied Numerical Modeling in Geomechanics*, Billiaux, Hazzard, Nelson & Schöpfer (eds.), Itasca Inter., Paper: 03-11

Dhakal, R., Cubrinovski, M., and Bray, J.D. (2020) "Liquefaction of reclaimed soils in the Port of Wellington, New Zealand," *Proc. 17th World Conference on Earthquake Engineering*, 17WCEE Sendai, Japan - Sept 13-18, Paper 4b-0053.

Mijic, Z., Bray, J.D., Riemer, M.F., Rees, S.D., and Cubrinovski, M. (2020) "Cyclic response of Christchurch native silty soils

in simple shear stress conditions," *Proc. 17th World Conference on Earthquake Engineering*, 17WCEE Sendai, Japan - Sept 13-18, Paper 4b-0049.

Macedo, J., Bray, J., Olson, S., and Bareither, C. (2020) "TAILENG Mine Tailings Database," *Proceedings Tailings and Mine Waste 2020*, UBC Studios, Vancouver BC, 319-326.

#### OTHER PUBLICATIONS

J. D. Bray, R. B. Seed and H. B. Seed, "The Effects of Tectonic Movements on Stresses and Deformations in Earth Embankments", Report No. UCB/EERC-90/13, Earthquake Engineering Research Center, University of California, Berkeley, September 1989, 414 pp.

R. B. Seed, R. W. Boulanger, J. D. Bray, S. E. Dickenson, R. E. Kayen, J. Lysmer, J. K. Mitchell, P. G. Nicholson, M. J. Pender, M. F. Riemer, G. R. Schmertmann, and N. Sitar, "The Loma Prieta Earthquake of October 17, 1989: Geotechnical Considerations", Chapter 2 in the "Preliminary Report on the Seismological and Engineering Aspects of the October 17, 1989 Santa Cruz (Loma Prieta) Earthquake", Earthquake Engineering Research Center, Report No. UCB/EERC-89/14, University of California, Berkeley, pp. 4-14, October, 1989.

J. D. Bray, "The Effects of Tectonic Movements on Stresses and Deformations in Earth Embankments", Ph.D. thesis, University of California, Berkeley, January 1990, 441 pp.

R. B. Seed, S. E. Dickenson, M. F. Riemer, J. D. Bray, N. Sitar, J. K. Mitchell, I. M. Idriss, A. Kropp, L. F. Harder, Jr. and M. S. Power, "Preliminary Report on the Principal Geotechnical Aspects of the October 17, 1989 Loma Prieta Earthquake", Earthquake Engineering Research Center, Report No. UCB/EERC-90/05, Univ. of California, Berkeley, April, 1990, 137 pp.

J. D. Bray, R. B. Seed and R. W. Boulanger, "Investigation of the Response of Puddingstone and Cogswell Dams in the Whittier Narrows Earthquake of October 1, 1987, Volume I: Puddingstone Dam", Geotechnical Engineering Report No. UCB/GT/90-01, University of California, Berkeley, June 1990, 60 pp.

R. W. Boulanger, R. B. Seed and J. D. Bray, "Investigation of the Response of Puddingstone and Cogswell Dams in the Whittier Narrows Earthquake of October 1, 1987, Volume II: Cogswell Dam", Geotechnical Engineering Report No. UCB/GT/90-02, University of California, Berkeley, June 1990, 53 pp.

R. W. Boulanger, J. D. Bray, S. H. Chew, R. B. Seed, J. M. Duncan and J. K. Mitchell, "SSCOMPPC: A Finite Element Analysis Program for Evaluation of Soil-Structure Interaction, and Compaction Effects: PC Version 1.0", Geotechnical Engineering Report No. UCB/GT/91-02, University of California, Berkeley, April 1991, 176 pp.

Guha, S., Bray, J.D., and Drnevich, V.P. "Characteristics of the Deep Old Bay Clay Deposits in the East San Francisco Bay Area", Geotechnical Engineering Report No. UCB/GT/93-09, University of California, Berkeley, Dec. 1993, 169 pp.

S. Chang, G. Santana, J. D. Bray and R. B. Seed, "Strong Ground Motion", Chapter 3 in the "Preliminary Report on the Seismological and Engineering Aspects of the January 17, 1994 Northridge Earthquake", Earthquake Engineering Research Center, Report No. UCB/EERC-94/01, University of California, Berkeley, pp. 3-1 to 3-11, January 24, 1994.

J. D. Bray, M. Riemer, R. B. Seed, N. Sitar and J. Stewart, "Geotechnical Considerations", Chapter 4 in the "Preliminary Report on the Seismological and Engineering Aspects of the January 17, 1994 Northridge Earthquake", Earthquake Engineering Research Center, Report No. UCB/EERC-94/01, Univ. of Calif., Berkeley, pp. 4-1 to 4-19, Jan. 24, 1994.

Geotechnical Engineering Group, Department of Civil Engineering, University of California at Berkeley, "Preliminary Report of the Geotechnical Aspects of the January 17, 1994 Northridge Earthquake" in *Geotechnical News*, Vol. 12, No. 1, pp. 27-29, March 1994.

S.W. Chang, J.D. Bray and R.B. Seed, "Ground Motions and Damage Patterns," in *Geotechnical News*, Vol. 12, No. 2, pp. 49-52, June 1994.

J. Stewart, P. Thomas, R.B. Seed and J.D. Bray, "Soil Liquefaction and Dynamic Ground Compaction" in *Geotechnical News*,

Vol. 12, No. 2, pp. 53-56, June 1994.

A.J. Augello, J.D. Bray and R.B. Seed, "Solid Waste Landfill Performance," in *Geotechnical News*, Vol. 12, No. 2, pp. 63-65, June 1994.

J.P. Stewart, J.D. Bray, R.B. Seed and N. Sitar, eds., "Preliminary Report on the Principal Geotechnical Aspects of the January 17, 1994 Northridge Earthquake," Earthquake Engineering Research Center, Report No. UCB/EERC-94/08, University of California, Berkeley, June 1994, 238 pp.

Murbach, D., Rockwell, T.K. and Bray, J.D. "Preliminary Observations: Characteristics of the 1992 Landers Surface Fault Rupture Adjacent to Distressed Structures", in *Mojave Desert*, Murbach, D. and Baldwin, J., eds, Martin Stout Volume, Annual Field Trip Guidebook #22, South Coast Geological Society, Santa Ana, California, pp. 590-598, 1994.

Fenton, J.S. and Bray, J.D. "Relation of Surficial Earth Materials to the Characteristics of the 1992 Landers Earthquake Surface Rupture", Geotechnical Engineering Report No. UCB/GT/94-05, Univ. of California, Berkeley, September 15, 1994, 75 pp.

Boulanger, R. W., Merry, S. M., Bray, J. D., and Mejia, L. H. "Three-Dimensional Dynamic Response Analyses of Cogswell Dam During the 1991 Sierra Madre and 1987 Whittier Narrows Earthquakes," Center For Geotechnical Modeling Report No. UCD/CGM-94/02, University of California, Davis, November 1994, 87 pp.

Riemer, M.F., Gookin, W.B., Bray, J.D. and Arango, I. "Effects of Loading Frequency and Central on the Liquefaction Behavior of Clean Sands", Geotechnical Engineering Report No. UCB/GT/94-07, University of California, Berkeley, December 1994, 87 pp.

Bray, J.D. "Earthquake Fault Rupture", *elements*, Dames & Moore, Vol. 23, No. 3, pp. 14-15, 1994.

Matasovic, N., Kavazanjian, Jr., E., Augello, A. J., Bray, J. D., and Seed, R. B., "Solid Waste Landfill Damage Caused by 17 January 1994 Northridge Earthquake," in *The Northridge, California, Earthquake of 17 January 1994*, Woods, M. C. and Seiple, W. R., eds., California Department of Conservation, Division of Mines and Geology Special Publication 116, pp. 61-69, 1995. [Invited Publication]

Kavazanjian, Jr., E., Matasovic, N., Bray, J. D., Augello, A., and Seed, R. B. "Damage to Landfills from the Northridge Earthquake," National Science Foundation Natural Hazard Mitigation Grantees Workshop, Session III, Paper No. 3, Lake Tahoe, Nevada, April 27-28, 1995.

Sitar, N., ed. "Geotechnical Reconnaissance of the Effects of the January 17, 1995, Hyogoken-Nanbu Earthquake, Japan," prepared by Akai et al. Earthquake Engineering Research Center, Report No. UCB/EERC-95/01, University of California, Berkeley, July 1995.

Espinoza, R.D., Bray, J.D., Taylor, R.L., and Soga, K. "GeoFEAP: Geotechnical Finite Element Analysis Program," Geotechnical Engineering Report No. UCB/GT/95-05, University of California, Berkeley, October 1995, 4 Parts, 500 pp.

Chang, S. W. and Bray, J. D. "Seismic Reponse of Deep, Stiff Soil Deposits in the Oakland, California Area during the Loma Prieta Earthquake," Geotechnical Engineering Report No. UCB/GT/95-06, University of California, Berkeley, November 1995, 100 pp.

Bray, J. D. "Other Geotechnical Issues," Chapter 11 in "North America - Japan Workshop on the Geotechnical Aspects of the Kobe, Loma Prieta and Northridge Earthquakes" edited by Bardet, J. P. et al., Department of Civil Engineering, University of Southern California, February 1997, pp. 66-72.

Chang, S. W., Bray, J. D., Gookin, W. B., and Riemer, M. F. "Seismic Response of Deep Stiff Soil Deposits in the Los Angeles, California Area During the 1994 Northridge Earthquake," Geotechnical Engineering Report No. UCB/GT/97-01, University of California, Berkeley, February 1997, 239 pp.

Gookin, W. B., Bray, J.D., and Riemer, M.F. "The Combined Effects of Loading Frequency and Other Parameters on Dynamic Properties of Reconstituted Cohesive Soils," Geotechnical Engineering Report No. UCB/GT/99-14, University of

California, Berkeley, April 1999, 110 pp.

Rodriguez-Marek, A., Bray, J.D., and Abrahamson, N.A. "Characterization of Site Response: General Site Categories," Pacific Earthquake Engineering Center Report No. 1999/03, University of California, Berkeley, February 1, 1999, 83 pp.

Pestana, J. M., M. J. Mendoza, J. M. Mayoral, R. E. S. Moss, R.B. Sancio, R. B. Seed, J. D. Bray, and M. P. Romo. "Preliminary Report on The Geotechnical Engineering Aspects of The June 15 And June 21, 1999, México, Earthquakes," Geotechnical Engineering Report No. UCB/GT/99-17, University of California, Berkeley, July 1999, 25 pp.

Ansal, Bardet, Bray, and other authors. "Preliminary Report on the Geotechnical Engineering Aspects of the August 17, 1999 Kocaeli, Turkey Earthquake," NSF web-based report distributed through PEER website, Sept. 1999.

Abrahamson, Bardet, Bray, and other authors. "Preliminary Report on the Geotechnical Engineering Aspects of the September 21, 1999 Chi-Chi, Taiwan Earthquake," NSF web-based report distributed through PEER website, Oct. 1999.

Ansal, Bardet, Bray, and other authors. "Preliminary Report on the Geotechnical Engineering Aspects of the November 12, Duzce Earthquake," NSF mandated web-based report distributed through the PEER website, November 1999.

Hunt, C. E., Pestana, J.M., Bray, J.D., Riemer, M., and Seed, R. B., "Geotechnical Field Measurements after Pile Installation in a Soft Clay Deposit," Geotechnical Engineering Report No. UCB/GT/2000-15, University of California, Berkeley, March 2000, 99 pp.

Wartman, J, Seed, R. B., and Bray J.D., "Physical Model Studies of Seismically Induced Deformations in Slopes", Geo-Engineering Report No. UCB/GT/01-01, Depart. of Civil and Environ. Engineering, Univ. of Calif., Berkeley, Jan. 2001

Wartman, J, Seed, R. B., and Bray J.D., "Experimental Data for Physical Model Studies of Seismically Induced Deformations in Slopes", Geo-Engineering Report No. UCB/GT/01-02, Department of Civil and Environmental Engineering, University of California, Berkeley, January 2001

Bray, J.D., Sancio, R.B., Youd, L.F., Christensen, C., Cetin, O., Onalp, A., Durgunoglu, T., Stewart, J. P., C., Seed, R. B., Baturay, M.B., Karadayilar, T., and Oge, C. "Documenting Incidents of Ground Failure Resulting from the August 17, 1999 Kocaeli, Turkey Earthquake," Pacific Earthquake Engineering Research Center website: <<http://peer.berkeley.edu/turkey/adapazari/index.html>>, February, 2001.

Bray, J., Sancio, R., Kammerer, A., Merry, S., Rodriguez-Marek, A., Khazai, B., Chang, S., Bastani, A., Collins, B., Hausler, E., Dreger, D., Perkins, W., and Nykamp, M. "Some Observations of Geotechnical Aspects of the February 28, 2001, Nisqually Earthquake in Olympia, South Seattle, and Tacoma, Washington," Pacific EQ. Engrg. Res. Cen.: <<http://peer.berkeley.edu/nisqually/geotech/index.html>>, March 8, 2001.

Bray, J., Sancio, R., Kammerer, A., Merry, S., Rodriguez-Marek, A., Khazai, B., Chang, S., Bastani, A., Collins, B., Hausler, E., Dreger, D., Perkins, W., and Nykamp, M. "Some Observations of Geotechnical Aspects of the February 28, 2001, Nisqually Earthquake in Olympia, South Seattle, and Tacoma, Washington," Abstract and Poster, Cascadia/Pacific Northwest Session at the Seismological Society of America Annual Meeting, San Francisco, CA, April 20, 2001.

Travasarou, T., Bray, J.D., Wartman, J., Seed, R.B., and Riemer, M.F. "Evaluation of Seismic Slope Displacement Procedures through Back-Analysis of Physical Model Tests" Geotechnical Engineering Report No. UCB/GT/01-04, University of California, Berkeley, June 2001, 107 pp.

Stewart, J.P., Chiou, S-J, Bray, J.D., Graves, R. W., Somerville, P.G., Abrahamson, N.A. "Ground Motion Evaluation Procedures for Performance-Based Design," PEER-2001/09, Pacific Earthquake Engineering Research Center, University of California, Berkeley, Sept. 2001, 229 pages.

Stewart, J.P., Smith, P.M., Whang, D. H., and Bray, J.D. "Documentation and Analysis of Field Case Histories of Seismic Compression during the 1994 Northridge, California, Earthquake," PEER-2002/09, Pacific Earthquake Engineering Research Center, University of California, Berkeley, Oct. 2002, 223 pages.

- Travasrou, T., and Bray, J.D. "Performance-Related Ground Motion Parameters for Seismic Slope Stability," *Proceedings of the 15<sup>th</sup> European Conference for Young Geotechnical Engineers*, Dublin, Ireland, September 2002.
- Seed, R.B., Cetin, K.O., Moss, R.E.S., Kammerer, A.M., Wu, J., Pestana, J.M., Riemer, M.F., Sancio, R.B., Bray, J.D., Kayen, R.E., and Faris, A. "Recent Advances in Soil Liquefaction Engineering: A Unified and Consistent Framework," 26<sup>th</sup> Annual ASCE Los Angeles Geotechnical Spring Seminar, Keynote Presentation, Long Beach, Calif., April 30, 2003.
- Bray, J.D., Sancio, R.B., Youd, T.L., Durgunoglu, H.T., Onalp, A., Cetin, K.O., Seed, R.B., Stewart, J.P., Christensen, C., Baturay, M.B., Karadayilar, T., and Emrem, C., "Documenting Incidents of Ground Failure Resulting from the August 17, 1999 Kocaeli, Turkey Earthquake. Data Report Characterizing Subsurface Conditions." Geoengineering Research Report No. UCB/GE-03/02. University of California, Berkeley. May 15, 2003.
- Sancio, R.B., Bray, J.D., Stewart, J.P., Youd, T.L., Durgunoglu, H.T., Onalp, A., Christensen, C., Baturay, M.B., Karadayilar, T., and Seed, R.B., "Correlacion Entre Falla De Suelo Y Condiciones Del Suelo En La Ciudad De Adapazari, Turquia," in *Tekhne, Revista de la Facultad De Ingenieria, Universidad Catolica Andres Bello, Caracas, Venezuela*, No. 6, 2003, pp. 82-92.
- Chen, W., Bray, J.D., and Seed, R.B. "Physical Model Tests of Seismic Slope Response," GeoEngineering Report No. UCB/GT/02-04, Univ. of Calif., Berkeley, Feb. 2004.
- Seed, R.B., P.G. Nicholson, R.A. Dalrymple, J. Battjes, R.G. Bea, G. Boutwell, J.D. Bray, B. Collins, L.F. Harder, J.R. Headland, M. Inamine, R.E. Kayen, R. Kuhr, H. Mashriqui, J. M. Pestana, F. Silva-Tulla, R. Storesund, S. Tanaka, J. Wartman, T. Wolff, L. Wooten and T. Zimmie., "Preliminary Report on the Performance of the New Orleans Levee Systems in Hurricane Katrina on August 29, 2005," Report No. UCB/CITRIS - 05/01, Univ. of Calif., Berk., Nov. 17, 2005.
- Yeats, R.S., St. Peters, K., Sherrod, B., Blakely, R.J., Weaver, C., Monken, M., and Bray, J.D., "Surface Faulting: A Paradigm Shift in the Puget Sound Region," Abstract presented at the Cordilleran Section – 103<sup>rd</sup> Annual Meeting, Seattle, WA, May 4-6, 2007.
- Dashti, S., J.D. Bray, M.F. Riemer, D. Wilson, "Centrifuge Experimentation of Building Performance on Liquefied Ground," Proc. 5<sup>th</sup> NEES Annual Meeting, June 19-21, 2007.
- Donahue, J.L., Bray, J.D., and Riemer, M.F., "The liquefaction susceptibility, resistance, and response of silty and clayey soils," GeoEngineering Report, Depart. of Civil and Environ. Engineering, Univ. of California, Berkeley, Jan 31, 2008.
- Ledezma, C. and Bray, J.D., "Performance-Based Earthquake Engineering Design Evaluation Procedure for Bridge Foundations Undergoing Liquefaction-Induced Lateral Ground Displacement," PEER Report 2008/05, Pacific Earthquake Engineering Research Center, College of Engineering, University of California, Berkeley, August 2008.
- Bray, J.D. and Frost, J.D., Eds., "Geo-engineering Reconnaissance of the 2010 Maule, Chile Earthquake," a report of the NSF- Sponsored GEER Association Team, primary authors: Arduino et al., <http://www.geerassociation.org/>, 2010.
- Bray, J.D., and Frost, J.D., with Arduino et al. (2010) "Geotechnical Effects," in "The Mw8.8 Chile Earthquake of February 27, 2010," Learning from Earthquakes EERI Special Earthquake Report, June.
- Dashti, S., Reilly, J., Bray, J.D., Bayen, A., Glaser, S. and Mari, E. (2010) "iShake: Mobile Phones as Seismic Sensors," American Geophysical Union Fall Meeting Abstract & Presentation, San Francisco, Dec. 17.
- Dashti, S., Reilly, J., Bray, J.D., Bayen, A., Glaser, S. and Mari, E. "iShake: Using Personal Devices to Deliver Rapid Semi-Qualitative Earthquake Shaking Information," GeoEngineering Report, Depart. of Civil and Environ. Engineering, Univ. of California, Berkeley, Feb 28, 2011.
- Shriro, M., and Bray, J.D., "Seismic Assessment of Earth Structures overlying Potentially Liquefiable Soils," U.S.G.S. Final Technical Report, Depart. of Civil and Environ. Engineering, Univ. of California, Berkeley, Sept. 28, 2011.

Cubrinovski, M. Green, R.A., and Wotherspoon, L., Eds., with Allen, J., Bradley, B., Bradshaw, A., Bray, J., DePascale, G., Cubrinovski, M. Green, R.A., Orense, R., O'Rourke, T., Pender, M., Rix, G., Wells, D., Wood, C., and Wotherspoon, L., "Geotechnical Reconnaissance of the Christchurch, New Zealand Earthquake," a report of the NSF-Sponsored GEER Association Team, GEER Report No. GEER-027, available at: <http://www.geerassociation.org/>, 2011.

Bray, J.D., Frost, J.D., and Rathje, E.M., "Turning Disaster into Knowledge," *Geo-Strata Magazine*, Geo-Institute of ASCE, Washington, D.C., Nov.-Dec. 2011, pp. 18-26.

Bray, J.D., O'Rourke, T.D., Cubrinovski, M., Zupan, J.D., Jeon, S.-S., Taylor, M., Toprak, S., Hughes, M., van Ballegooy, S., and Bouziou, D., "Liquefaction Impact on Critical Infrastructure in Christchurch," Final Technical Report, U.S.G.S. Award Number: G12AP20034, March 22, 2013.

Mason, H., N. Trombetta, S. Gille, J. Lund, J. Zupan, H. Puangnak, B. Choy, Z.Q. Chen, C. Bolisetti, J. Bray, T. Hutchinson, G. Fiegel, B. Kutter, A. Whittaker (2013) "Test-1: Two Isolated Structures on Dense, Dry Sand", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3TX3562R.

Mason, H., N. Trombetta, C. Bolisetti, Z.Q. Chen, B. Choy, J. Montgomery, R. Patel, J. Bray, G. Fiegel, T. Hutchinson, B. Kutter, R. Reitherman, A. Whittaker (2013) "Test-2: Two Adjacent Structures on Dense, Dry Sand (in-Plane SSSI)", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3Q52FC89.

Mason, H., N. Trombetta, S. Gille, J. Lund, J. Zupan, K. Jones, H. Puangnak, C. Bolisetti, J. Bray, T. Hutchinson, G. Fiegel, B. Kutter, A. Whittaker (2013) "Test-3: Three structures on Dense, Dry Sand (in-Plane SSSI)", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3KD1QK45.

Trombetta, N., J. Zupan, C. Bolisetti, H. Puangnak, K. Jones, J. Tran, P. Bassal, J. Bray, T. Hutchinson, G. Fiegel, B. Kutter, A. Whittaker (2013) "Test-4: Five Structures on Dense, Dry Sand (anti-Plane SSSI and iSSSI+aSSSI Superposition)", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3FN10S0D.

NIST (2011) "Selecting and Scaling Earthquake Ground Motions for Performing Response-History Analyses," prepared by *NEHRP Consultants Joint Venture, a partnership of the Applied Technology Council and the Consortium of Universities for Research in Earthquake Engineering*, National Institute of Standards and Technology, Report NIST GCR 11-917-15, November, Gaithersburg, Maryland.

Cobos Roa, D., Shriro, M., Sitar, N., and Bray, J.D., "Influence of Tree Roots and Mammal Burrowing Activity on Levee Performance" Volume 1.- Review of Literature and Case Histories," Geotechnical Engineering, Depart. of Civil and Environmental Engineering, Univ. of California, Berkeley, Report UCB GT 13-03 vol. 1, August 2013.

Cobos Roa, D., Shriro, M., Sitar, N., and Bray, J.D., "Influence of Tree Roots and Mammal Burrowing Activity on Levee Performance" Volume 4.- Field Evaluation of Burrowing Animal Impacts and Effectiveness of Remedial Measures," Geotechnical Engineering, Depart. of Civil and Environmental Engineering, Univ. of California, Berkeley, Report UCB GT 13-03 vol. 4, August 2013.

Zupan, J., N. Trombetta, H. Puangnak, D. Paez, J. Bray, B. Kutter, T. Hutchinson, G. Fiegel, C. Bolisetti, A. Whittaker (2013) "Test-5: Seven Elastic Model Structures on a Layered, Saturated Soil Profile.", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D39W08Z6N.

Hayden, C., J. Allmond, I. Rawlings, B. Kutter, J. Bray, T. Hutchinson, G. Fiegel, J. Zupan, A. Whittaker (2014) "Test-6: Six Elastic Model Structures on a Layered, Saturated Soil Profile.", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3QF8JJ99.

Allmond, J., Kutter, B., Bray, J., and Hayden, C. (2014) "Foundation and Ground Performance in Liquefaction Experiments," Network for Earthquake Engineering Simulation (NEES) (distributor), Database, Network for Earthquake Engineering Simulation (NEES), DOI:10.4231/D3M61BQ73.

Shriro, M., Cobos Roa, D., Bray, J.D., Sitar, N., Lichter, J., and Evans, R., "Influence of Tree Roots and Mammal Burrowing Activity on Levee Performance" Volume 2.- Parallel Trench Wetting Front Test, North Levee of the American River at Cal

Expo Sacramento, California,” Geotechnical Engineering, Depart. of Civil and Environmental Engineering, Univ. of California, Berkeley, Report UCB GT 13-03 vol. 2, May 2014.

Cobos Roa, D., Shriro, M., Sitar, N., and Bray, J.D., “Influence of Tree Roots and Mammal Burrowing Activity on Levee Performance” Volume 5.- Modeling Tree Roots and Mammal Burrowing Effects on Seepage and Stability of Levees,” Geotechnical Engineering, Depart. of Civil and Environmental Engineering, Univ. of California, Berkeley, Report UCB GT 13-03 vol. 5, October 2014.

Bray, J., Cohen-Waeber, J., Dawson, T., Kishida, T., and Sitar, N., Editors (2014) “Geotechnical Engineering Reconnaissance of the August 24, 2014 M6 South Napa Earthquake,” Report of the NSF-Sponsored GEER Association, California Geological Survey, Pacific Earthquake Engineering Research Center, and U.S. Geological Survey, GEER Association Report No. GEER-037, Version 1: September 15, 2014.

Bray, J., Cohen-Waeber, J., Dawson, T., Kishida, T., Sitar, N., Beyzaei, C., Harder, L., Hudnut, K., Kelson, K., Lanzafame, R., Luque, R., Ponti, D., Shriro, M., Wagner, N., and Wesling, J. (2014) “Geotechnical Engineering,” in “M6.0 South Napa Earthquake of August 24, 2014,” EERI Special Earthquake Report, October 2014.

K. W. Hudnut, T. M. Brocher, C. S. Prentice, J. Boatwright, B. A. Brooks, B. T. Aagaard, J. L. Blair, J. B. Fletcher, J. E. Erdem, C. W. Wicks, J. R. Murray, F.F. Pollitz, J. Langbein, J. Svarc, D. P. Schwartz, D. J. Ponti, S. Hecker, S. DeLong, C. Rosa, B. Jones, R. Lamb, A. M. Rosinski, T. P. McCrink, T. E. Dawson, G. Seitz, R. S. Rubin, C. Glennie, D. Hauser, T. Ericksen, D. Mardock, D.F. Hoirup, and J. D. Bray (2014) “Key Recovery Factors for the August 24, 2014, South Napa Earthquake, report from USGS to FEMA for Interagency Agreement HSFE09-15-X0805 (DR-4193), U.S.G.S. Open-File Report 2014-1249, 51 p. <http://dx.doi.org/10.3133/ofr20141249>.

Shriro, M., Bray, J.D., Sitar, N., and Cobos Roa, D., “Influence of Tree Roots and Mammal Burrowing Activity on Levee Performance” Volume 3.- Crown Trench Seepage Test, Northern Levee of Twitchell Island, Rio Vista, California,” Geotechnical Engineering, Depart. of Civil and Environmental Engineering, Univ. of California, Berkeley, Report UCB GT 13-03 vol. 3, September 2014.

Wagner, N., Sitar, N., and Bray, J.D. (2014) “Ground Deformation in the Very Near Fault Region during the  $M_w$  6.0 West Napa Earthquake,” American Geophysical Union Fall Meeting Abstract & Poster S33F-4897, San Francisco, Dec. 15.

Cohen-Waeber, J., Bray, J.D., and Sitar, N. (2014) “The Performance of Structures in Densely Urbanized Areas Affected by Surface Fault Rupture during the August 24, 2014 M6 South Napa Earthquake, California, USA,” American Geophysical Union Fall Meeting Abstract & Poster, San Francisco, Dec. 15.

Hudnet, K.W., Glennie, C.L., Brooks, B.A., Hauser, D.L., Ericksen, T., Boatwright, J., Rosinski, A., Dawson, T.E., McCrink, T.P., Mardock, D.K., Hoirup, D.F., and Bray, J.D. (2014) “Near-Field Deformation Associated with the South Napa Earthquake (M6.0) using Differential Airborne LiDAR,” American Geophysical Union Fall Meeting Abstract & Poster S33F-4896, San Francisco, Dec. 17.

Kishida, T. Wang, S., Mazzoni, S., Markham, M., Lu, Y., Bozorgnia, Y., Mahin, S.A., Bray, J.D., Panagiotou, M., Steart, J.P., Darragh, R.B., Abrahamson, N.A., Hollenback, J., Gutierrez, C., Chiou, B.S.J., Muin, S., Dreger, D.S. (2014) “Strong-Motion Records on the August 24, 2014, South Napa Earthquake,” American Geophysical Union Fall Meeting Abstract & Poster, San Francisco, Dec. 17.

Bray, J.D. (2015) “Geotechnical Extreme Events Reconnaissance – Turning Disaster into Knowledge,” As I See It article in GEOSTRATA Magazine, July/August, pp. 22-25.

Bray, J.D., Rathje, E.M., and Frost, J.D. (2016) “Turning Disaster into Knowledge,” 1st International Symposium on Soil Dynamics and Geotechnical Sustainability, HKUST, Hong Kong, China, 7-10 August, ISBN 978-988-14032-4-7, pp. 1-2.

Rogers, J.D., Pyles, M.R., Bray, J.D., Skaugset, A., and Storesund, R. (2015) “Preliminary Expert Report, Superior Court of Washington for King County,” No. 14-2-18401-8 SEA, June 1.

Rogers, J.D., Pyles, M.R., Bray, J.D., Skaugset, A., Storesund, R., and Schlieder, G. (2016) “Interim Expert Report, Superior

Court of Washington for King County,” No. 14-2-18401-8 SEA, January 22.

Pyles, M.R., Rogers, J.D., Bray, J.D., Skaugset, A., Storesund, R., and Schlieder, G. (2016) “Expert Opinion Report, Superior Court of Washington for King County,” No. 14-2-18401-8 SEA, June 30.

Bray, J.D., Boulanger, R.W., Cubrinovski, M., Tokimatsu, K., Kramer, S.L., O’Rourke, T., Rathje, E., Green, R.A., Robertson, P., and Beyzaei, C.S. (2017) “U.S.–New Zealand–Japan International Workshop, Liquefaction-Induced Ground Movements Effects, University of California, Berkeley, California, 2–4 November 2016,” PEER Report 2017/02, Pacific Earthquake Engineering Research Center, UC Berkeley, March.

Yerro, A., Soga, K., and Bray, J.D. (2017) “Runout Evaluation of the Oso, Washington Landslide with the Material Point Method,” Proc. JTC1 Workshop and Advances in Landslide Understanding, Barcelona, Spain, May.

Cubrinovski, M. and Bray, J.D., Eds. (2017) “Geotechnical Reconnaissance of the 2016  $M_w$  7.8 Kaikoura, New Zealand Earthquake.” GEER Report 053, Version 1.0, 10 June.

Hamburger, R. and Moehle, J. with: J. Baker, J. Bray, C.B. Crouse, G. Deierlein, J. Hooper, M. Lew, J. Maffei, S. Mahin, J. Malley, F. Naeim, J. Stewart, and J. Wallace (2017) “Guidelines for Performance-Based Seismic Design of Tall Buildings,” Version 2.03, PEER 2017/06, Pacific Earthquake Engineering Research Center, UC Berkeley, May.

Bray, J.D. and Macedo, J. (2018) “Procedure for Estimating Liquefaction-Induced Building Settlement,” Poster at Packard Foundation Fellows Annual Meeting, San Diego, CA, 9 September 2018.

Garcia, E. and Bray, J.D. (2018) “Discrete Element Analysis of Earthquake Fault Rupture-Soil Foundation Interaction,” Poster at Packard Foundation Fellows Annual Meeting, San Diego, CA, 9 September 2018.

Bray, J.D. (2019) “Soft Clay Response at the Cypress Structure in Oakland during the 1989 Loma Prieta Earthquake,” appearance on the “Engineering Catastrophes” TV Show, 22 October 2019.

Stringer, M., Cubrinovski, M., Bray, J.D., Haycock, I., Beyzaei, C.Z., Jacka, M., & Wentz, F.J. (2020) “Recommendations for High Quality Field Sampling using the Gel-Push Type S Sampler,” Univ. of Canterbury Report Prepared for NZ MBIE, Ver. 1.0, June.

Stringer, M., Cubrinovski, M., Bray, J.D., Haycock, I., Beyzaei, C.Z., Jacka, M., & Wentz, F.J. (2020) “Recommendations for High Quality Field Sampling using the Gel-Push Type TR Sampler,” Univ. of Canterbury Report Prepared for NZ MBIE, Ver. 1.0, June.

Bray, J.D., Beyzaei, C.Z., Cubrinovski, M., Riemer, M., Markham, C., Stringer, M.E., Jacka, M., Wentz, F.J., and Haycock, I. (2020) “Recommendations for High Quality Field Sampling using the Dames & Moore (DM) Hydraulic Fixed-Piston Thin-Walled Tube Sampler,” Univ. of Canterbury Report Prepared for NZ MBIE, Ver. 1.0, June 3.

Brandenberg, S.J., Bray, J.D., and Carey, T.J. (2020) “CGM Users Strategic Planning Workshop Report,” Center for Geotechnical Modeling Report No. UCD/GGM-20/01, UC Davis, December.

Deierlein, G.G., and Zsarnoczay, A., Eds. (2021) “State-of-Art in Computational Simulation for Natural Hazards Engineering,” SimCenter Report No. 2021-01, 2<sup>nd</sup> Ed., January, DOI: 10.5281/zenodo.2579581.

Macedo, J., Bareither, C., Bray, J., and Olson, S., Alexieva, T., Castro, G., da Fonseca, A., Eldridge, T., Frost, D., Hatton, C., Kramer, S., Lysay, G., Morrison, K., and Watts, B. (2021) “TAILENG perspective on tailings engineering – Tailings education and research in the industry,” *Mining Engineering*, V. 73(1), 26-27.

Hutabarat, D., and Bray J.D. (2021) “Effective Stress Analysis of Liquefaction Sites and Evaluation of Sediment Ejecta Potential,” PEER 2021/03, Pacific Earthquake Engineering Research Center, UC Berkeley, April.