

Biographical Summary

ANIL K. CHOPRA
(510) 642-1292 (bus.)
(925) 254-9275 (res.)

Personal Data

Born: February 18, 1941; Peshawar, India
Citizenship: Naturalized U.S. Citizen, 1977

Education

B.S. Civil Engineering, Banaras Hindu University, India, 1960
M.S. Civil Engineering, University of California, Berkeley, 1963
Ph.D. Civil Engineering, University of California, Berkeley, 1966

Professional and Academic Experience

1960 Engineer, Standard Vacuum Oil Company, India
1961 Design Engineer, Kaiser Engineers Overseas Corp., India
1966-67 Assistant Professor of Civil Engineering, University of Minnesota, Minneapolis
1967-92 Lecturer and Assistant Research Engineer (1967-69), Assistant Professor (1969-71), Associate Professor (1971-76), Professor (1976-) of Civil Engineering, University of California Berkeley
1980-83 Vice Chairman, Division of Structural Engineering and Structural Mechanics, University of California, Berkeley
1991-93, Chair, Structural Engineering, Mechanics and Materials Group, Department of Civil Engineering, University of California, Berkeley
1994-97 Horace, Dorothy, and Katherine Johnson Chair in Engineering, University of California, Berkeley

Awards and Honors

Banaras Hindu University Gold Medal for standing first in order of merit at the B.Sc. (Civil Engineering) examination, 1960
Certificate of merit awarded to the paper, "Analysis of Earthquake Performance of Koyna Dam," by the Indian Society of Earthquake Technology, 1974
Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers, 1975
Norman Medal, American Society of Civil Engineers, 1979
Distinguished Alumnus Award, Banaras Hindu University, Varanasi, India, awarded at the Diamond Jubilee Celebration of Engineering Education, 1980
Elected to the National Academy of Engineering, 1984
Honor Award, Association of Indians in America, 1985
AT&T Foundation Award, American Society for Engineering Education, 1987
Raymond C. Reese Research Prize, American Society of Civil Engineers, 1989
Miller Research Professor, University of California at Berkeley, Fall, 1990
Norman Medal, American Society of Civil Engineers, 1991
Horace, Dorothy and Katherine Johnson Chair in Engineering, University of California of Berkeley, 1992
Nathan M. Newmark Medal, American Society of Civil Engineers, 1993
Ernest E. Howard Award, American Society of Civil Engineers, 1998
Distinguished Teaching Award, University of California at Berkeley, 1999
Norman Medal, American Society of Civil Engineers, 2001
George W. Housner Medal, Earthquake Engineering Research Institute, 2002
National Award for Significant Contribution in Science and Technology, Government of Venezuela, 2002
Miller Research Professor, University of California, Berkeley, 2003-2004
Elected Honorary Member International Association for Earthquake Engineering, 2004
Elected Fellow, Structural Engineers Association of California, 2004
Doctor Honoris Causa, Technical University of Engineering, Bucharest, Romania, 2007

Keynote Lectures and Distinguished Lectures

- "Earthquake Analysis, Design, and Safety Evaluation of Concrete Gravity Dams," 1986 Annual Lecture, Indian Society of Earthquake Technology, Roorkee, India, 1986.
- "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," Keynote Lecture, 5th Canadian Conference on Earthquake Engineering, Ottawa, Ontario, Canada, July 6-8, 1987
- "Earthquake Analysis and Response of Concrete Dams," Keynote Lecture, Engineering Mechanics Division Conference, ASCE, Blacksburg, Virginia, May 22-25, 1988
- "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," Keynote Paper presented at the International Workshop on Research Needs in Dam Safety, New Delhi, India, February 7-14, 1989
- "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," a seminar in the 1989 Distinguished Lecturer Series, Department of Civil and Environmental Engineering, University of Houston, Houston, Texas, March 31, 1989
- "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," invited Keynote Lecture, Fourth U.S. National Conference on Earthquake Engineering, Palm Springs, California, May, 1990.
- Lecture series on earthquake engineering presented at National Taiwan University, at the invitation of the National Science Council, Republic of China, 1990.
- "Earthquake Analysis, Design, and Safety Evaluation of Concrete Arch Dams," Invited State-of-the-Art Lecture, Tenth World Conference on Earthquake Engineering, Spain, July, 1992.
- "Accidental and Natural Torsion in Earthquake Response and Design of Buildings," State-of-the-Art talk, 11th World Conference on Earthquake Engineering, Acapulco, Mexico, June 1996.
- "Numerical Analysis of Concrete Dams: Past, Present and Future," Keynote Address, Fifth Benchmark Workshop on Numerical Analysis of Dams, International Commission on Large Dams, Denver, CO, June 2-5, 1999.
- "Earthquake Analysis, Design, and Safety Evaluation of Arch Dams, Invited Keynote Lecture, 3rd U.S.-Japan Workshop on Advanced Research on Earthquake Engineering for Dams, San Diego, Calif., 22-23 June 2002.
- "Estimating Seismic Demands for Performance-Based Seismic Engineering of Buildings," Emilio Rosenblueth Lecture, University of Mexico, Mexico City, March 2003.
- "A Modal Pushover Analysis Procedure to Estimate Seismic Demands for Buildings: Summary and Evaluation," Keynote Lecture, 5th National Conference on Earthquake Engineering, Istanbul, Turkey, May 2003.
- "Estimating Seismic Demands for Performance-Based Seismic Engineering of Buildings," Special Lecture for Graduating M.S. Class in Earthquake Engineering, Aristotle University, Thessaloniki, Greece, June 2003.
- "Estimating Seismic Demands for Performance-Based Engineering of Buildings," *CD-Rom Proceedings*, International Conference in Commemoration of the 5th Anniversary of the 1999 Chi-Chi Earthquake, Taiwan, Taipei, Taiwan. September 2004.
- "Estimating Seismic Demands for Performance-Based Engineering of Buildings," Keynote Paper No. 5007, *Proceedings*, 13th World Conference Earthquake Engineering, Vancouver, Canada, August 2004.
- "Estimated Seismic Demands for Performance-Based Engineering of Buildings," Keynote Address, Earthquake Engineering in the 21st Century, International Conference to Commemorate 40th Anniversary of the Institute of Earthquake Engineering and Engineering Seismology, Skopje. Macedonia, September 2005.
- "Estimated Seismic Demands for Performance-Based Engineering of Buildings," Keynote Address, IX Jornadas de Sismologia, Concepcion, Chile, November 2005.
- "Estimating Seismic Demands for Performance-Based Engineering of Buildings, Keynote Address, Conference, Thirty Years from the Romania Earthquake of 4 March 1977, Bucharest, Romania, March 2007.

“Estimating Seismic Demands for Performance-Based Engineering of Buildings,” Keynote Address, International Conference on Earthquake Engineering and Disaster Mitigation, Jakarta, Indonesia, April 2008.

Activities in Professional Societies

American Society of Civil Engineers, Member

American Society of Civil Engineers, Engineering Mechanics Division

Dynamics Committee, Chairman (1975-77)

Editorial Board, *Journal of the Engineering Mechanics Division* (1975-77)

Advisory Committee, 1983 ASCE-EMD Specialty Conference

Executive Committee

Secretary (1981-83), Member (1983-87), Chairman (1986)

Advisory Board (1986-91), Chairman (1989)

American Society of Civil Engineers, Structural Division

Committee on Seismic Effects, Chairman (1983-86)

Administrative Committee on Dynamic Effects, Chairman (1986-88)

Steering Committee, 1989 Structures Congress

Executive Committee, Member (1988-92), Chairman (1991)

Awards Committee (1991-96)

Earthquake Engineering Research Institute, Member

Board of Directors (1990-93)

Committee on Strong Motion (1973-79)

Committee on Earthquake Design Computations (1977-80)

Steering Committee, 1979 National Conference on Earthquake Engineering

Steering Committee, 8th World Conference on Earthquake Engineering

Advisory and Program Committees, 4th U.S. National Conference on Earthquake Engineering, 1990

Monograph Committee, Chairman (1989-90)

Honors Committee (1993-99)

Endowment Committee (1994-96)

Editorial Board, *Earthquake Spectra* (1999-)

International Association for Earthquake Engineering

Technical Review Committee Member for 5th, 6th, 7th, 9th, 10th, and 11th World Conferences on Earthquake Engineering (1973, -77, -80, -88, -92, -96)

Earthquake Engineering and Structural Dynamics: General Editor

Executive Committee: Consultative Member (2000-)

U.S. Society on Dams, Member

Committee on Methods of Numerical Analysis of Dams (1978-)

American Concrete Institute

Committee 442: Response of Buildings to Lateral Forces (1971-81)

Structural Engineers Association of Northern California, Member

Seismology Committee (1971-74, 1985-87), Research Committee (1985-89)

Board of Directors, Member (1987-89)

Seismological Society of America, Member; Board of Directors (1982-83)

Indian Society of Earthquake Technology, Member

Applied Technology Council

Board of Directors (1972-74)

Chairman, Task Committee on Structural Analysis, Applied Technology Council Project ATC-3 for the development of new recommendations for the seismic design provisions of building codes (1974-77)

Participant, ATC-35 Ground Motion Initiative Workshop, San Diego, California, July 30-31, 1997.

Applied Technology Council

Focus Group FEMA-440 Project on “Improvement of Inelastic Seismic Analysis Procedures”

Applied Technology Council

Focus Group FEMA-440 Project on "Improvement of Inelastic Seismic Analysis Procedures"
 American Society of Mechanical Engineers
 Task Force on Seismic Analysis of Mechanical Systems (1982-88)

Service to Educational or Governmental Agencies

National Academy of Sciences Review Committee for "The Great Alaska Earthquake of 1964: Engineering" (1972)
 Member, U.S. Delegation (eight members) to the U.S.-Japan Seminar on Earthquake Engineering with Emphasis on Lifeline Systems, Tokyo, Japan, 1976
 Member, U.S. Delegation (six members) to the Soviet Union to discuss and exchange information on design and construction of dams and hydroelectric power plant structures in seismic regions, 1977
 Member, U.S. Delegation (twelve members) to the Advisory meeting on Earthquake Engineering and Landslides, U.S.-R.O.C. Cooperative Science Program, Taipei, R.O.C., 1977
 Member, U.S. Delegation (ten members) to the Indo-U.S.A. Workshop on Natural Disasters Mitigation Research, New Delhi, India, 1978
 Member, Advisory Board, MIT Press Series in Structural Mechanics (1979-82)
 National Research Council Committee on Natural Disasters
 Member (1980-85); Vice Chairman (1981); Chairman (1982-83)
 Member, Earthquake Engineering Panel (1974-79)
 National Research Council Committee on Earthquake Engineering Research (1981-82)
 Working Group Member
 National Research Council Committee on Earthquake Engineering: Panel on Concrete Dams (1986-90)
 National Science Foundation: U.S. Planning Committee for the U.S.-China Arch Dams Workshop, 1987
 Seismic Safety Commission, State of California
 Member, Lifeline Facilities Subcommittee, Strong Motion Instrumentation Committee (1981-85)
 Advisory Committee, U.S.-India Cooperative Earthquake Instrumentation Project (1981-87)
 Participant, Earthquake Hazards Mitigation Program Future Directories II Workshop,
 National Science Foundation, August 3-4, 1995
 Member, Advisory Committee on Structural Safety of Department of Veterans Affairs Facilities,
 Department of Veterans Affairs, Washington, D.C. (1995-2000)
 Member, Consulting Board for Earthquake Analysis, Division of Safety of Dams, Department of Water Resources, State of California (1996-)
 Member, Technical Subcommittee 2 on Design Criteria and Analysis, Building Seismic Safety Council,
 National Institute of Building Sciences (1998-2001)
 National Academy of Engineering
 Civil Engineering Peer Committee (1997-99); Chair (1999).
 Nominating Committee (2003-2004)
 Section Liaison to National Research Council (2004-2007)
 Membership Policy Committee (2004-2006)
 Member, Department of Conservation, Strong Motion Instrumentation Program, State of California, Strong Motion Instrumentation Advisory Committee (2003-)

Editorial and Review Service

National Academy of Sciences Review Committee for "The Great Alaska Earthquake of 1964: Engineering" (1972)
 International Association for Earthquake Engineering
 Technical Review Committee Member for 5th, 6th, 7th, 9th, 10th, and 11th World Conferences on Earthquake Engineering (1973, -77, -80, -88, -92, -96)
 Editorial Board, *Journal of the Engineering Mechanics Division*, ASCE (1975-77)
 Member, Advisory Board, MIT Press Series in Structural Mechanics (1979-82)
 Executive Editor, *Earthquake Engineering and Structural Dynamics*, the Journal of the International Association for Earthquake Engineering, General Editor (1996-2004); Associate Editor (1988-96).

Editorial and Review Service (continued)

Editorial Advisory Board, *Dam Engineering*, an international journal published by International Water Power and Dam Construction (1990-)

National Science Foundation, Chair, Panel to review research proposals, June, 1994

Editorial Board, *Earthquake Spectra* (1999-2006)

Editorial Committee, *Journal of Earthquake Technology*, Indian Society for Earthquake Technology (1999-)

Invited Talks

- 1969 Universidad Central de Venezuela, Caracas
- 1972 California Institute of Technology, Pasadena
- 1973 Structural Engineers Association of California, San Francisco
- 1973 Structural Engineers Association of California, San Diego
- 1973 Stanford University
- 1974 Winter Annual Meeting, American Society of Mechanical Engineers
- 1975 Institute of Earthquake Engineering and Engineering Seismology, Skopje, Yugoslavia
- 1976-79 Earthquake Engineering Research Institute: Symposium on Interpretation of Strong Motion Earthquake Records for Design Criteria and Structural Response: Oakland; Los Angeles; Seattle; Washington, D.C.; Houston; St. Louis; Mayaguez, Puerto Rico
- 1976 U.S. Army Corps of Engineers
- 1976 U.S.-Japan Seminar on Earthquake Engineering, Tokyo
- 1977 U.S. Nuclear Regulatory Commission
- 1977 Waterways Experiment Station, U.S. Army Corps of Engineers, Vicksburg, Mississippi
- 1977 U.S.-R.O.C. Cooperative Science Program, Taipei, R.O.C.
- 1977 U.S.-Soviet Union Seminar on Design of Large Dams in Seismic Areas, Moscow
- 1978 Universidad Politecnica de Madrid, Spain
- 1978 Structural Engineers Association of California, Los Angeles
- 1978 University of Notre Dame
- 1980 Symposium on Seismic Design Today, ASCE, Los Angeles
- 1980 Waterways Experiment Station, U.S. Army Corps of Engineers, Vicksburg, Mississippi
- 1980 Panel on Soil-Structure Interaction, 7th World Conference on Earthquake Engineering, Istanbul, Turkey
- 1981 Tercer Seminario Internacional Sobre Ingenieria Sismica, Bogota, Colombia
- 1982 Earthquake Engineering Research Institute--Regional Seminars in Salt Lake City, Utah and Anchorage, Alaska
- 1982 Winter Annual Meeting, American Society of Mechanical Engineers
- 1983 Illinois Section, ASCE and Great Lakes Chapter, EERI, Chicago
- 1983 Ohio State University, Columbus
- 1984 University of Catania, Italy: Series of ten lectures on "Earthquake Analysis Response and Design of Structures Including Structure-Water-Foundation Interaction," June, 1984
- 1984 Association of Engineers, Province of Catania, Italy: "Dynamic Analysis and Building Code Procedures," June, 1984
- 1984 Stanford University, "Earthquake Analysis and Design of Concrete Dams"
- 1985 EERI Seminar on Earthquake Fundamentals, Boston: "Structural Engineering--Analysis"
- 1986 Structural Engineers Association of Northern California, San Francisco
- 1987 EERI Seminar on "Strong Ground Motion--Analysis, Design and Code Issues," San Francisco
- 1988 "Building Structural Analysis and Codes," EERI-Sponsored Two-Day Seminar on Strong Ground Motion--Seismic Analysis, Design, and Code Issues in the Central United States, Chicago, Illinois, May 13-14, 1988.
- 1988 "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," Pacific Gas and Electric Company, San Francisco, California, April 29, 1988.
- 1988 "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," Division of Safety of Dams, Department of Water Resources, State of California, Sacramento, California, June 29,

1988.

Invited Talks (continued)

- 1989 "Earthquake Analysis and Response of Concrete Dams," Department of Civil Engineering, Rice University, Houston, Texas, March 31, 1989.
- 1989 "Fundamentals of Structural Dynamics," Pacific Gas and Electric Company, San Francisco, California, May 19, 1989.
- 1994 "Structural Analysis," short course on "Awareness in Earthquake Engineering Practice," University of California, Berkeley, June, 1994.
- 1995 "What Ground Motion Parameters Should be Mapped," National Earthquake Ground Motion Mapping Workshop, Los Angeles, California, September 22-23, 1995.
- 1995 "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," CUREe Symposium in Honor of George Housner, Pasadena, California, October 27-28, 1995.
- 1996 "Concrete Dam Analysis," Association of State Dam Safety Officials Seminar on Earthquake Engineering for Dams, Sacramento, California, April 11-12, 1996.
- 1996 "Emilio Rosenblueth's Selected Results in Structural Dynamics," 11th World Conference on Earthquake Engineering, Acapulco, Mexico, June 1996.
- 1997 "Improvements in Code Analysis of Buildings using Motions Recorded during Earthquakes," Northridge Earthquake Conference, Los Angeles, August 1997.
- 1998 "Accuracy of Response Spectrum Estimates of Structural Response to Near Field Earthquake Ground Motions," Structural Engineers World Congress, San Francisco, CA, July 20-24, 1998.
- 1998 "Seismic code Improvements Based on Recorded Motions of Buildings during Earthquakes," SMIP98 Utilization of Strong Motion Data, Oakland, CA, September 15, 1998.
- 1999 "Capacity-Demand Diagram Methods for Estimating Seismic Deformation of Buildings," Meeting on U.S.-Japan Cooperation Research in Urban Earthquake Disaster Mitigation, Sonoma, CA, March 19, 1999.
- 1999 "Dynamic Analysis Procedures for Performance-Based Seismic Design," Seoul National University, Seoul, Korea, December 14-15, 1999.
- 1999 "Earthquake Analysis, Design, and Safety Evaluation of Concrete Gravity Dams," Seoul National University, Seoul, Korea, December 14-15, 1999.
- 1999 Workshop on Performance-Based Seismic Design of Buildings, National Center for Research on Earthquake Engineering, Taiwan, December 17-18, 1999.
- 2000 "Capacity-Demand-Diagram Methods Based on Inelastic Design Spectrum," 12th World Conference on Earthquake Engineering, Auckland, New Zealand, January 30-February 4, 2000.
- 2000 "Earthquake Analysis, Design, and Safety Evaluation of Concrete Dams," Seminar 2000 Disastres Sismicos, Ministerio de Ciencia Y Tecnologia, Caracas, Venezuela, February 21-25, 2000.
- 2001 "Earthquake Analysis, Design and Safety Evaluation of Concrete Dams," Seminar, Earthquake Engineering Research Institute Student Chapter, University of California, Los Angeles, California, 4 June 2001.
- 2002 "Modal Pushover Analysis of Generic Frames, 7th National Conference on Earthquake Engineering, Earthquake Engineering Research Institute, Boston, Mass., July 2002.
- 2002 "Modal Pushover Seismic Analysis of SAC Buildings excluding Gravity Loads," 12th European Conference on Earthquake Engineering, London, September 2002.
- 2004 "Modal Pushover Analysis: Symmetric and Unsymmetric-plan Buildings," Workshop on Performance-Based Design, BLED, Slovenia, June 2004.
- 2005 "Estimating Seismic Demands for Performance-Based Engineering of Buildings," Invited Lecture Series, University of Catania, Catania, Italy, June 2005.
- 2005 "Estimating Seismic Demands for Performance-Based Engineering of Buildings," Invited Lecture, Orinde degli Ingegneri della Provincia di Catania, Catania, Italy, June 2005.

- 2005 "Estimating Seismic Demands for Structures in Engineering Practice: Constrained by Computer Software, Building Codes, and Building Evaluation Guidelines, Luis Esteva Symposium: Seismic Engineering—Challenges and Tendencies, Mexico City, Mexico.
- 2006 "Estimated Seismic Demands for Performance-Based Engineering of Buildings," Invited Lecture, International Institute of Earthquake Engineering and Seismology, Tehran, Iran.

Invited Talks (continued)

- 2006 "Evaluation of the Modal Pushover Analysis Procedure for Unsymmetric-Plan Buildings," First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, September 2006.
- 2008 "Short Course on Performance-Based Design," Indonesian Earthquake Engineering Association and Institute Teknologi Bandung, Jakarta, Indonesia, April 2008.
- 2008 "Application of Modal Pushover Analysis to RC Frames and Incremental Dynamic Analysis," Workshop on Nonlinear Static methods for Design Assessment of 3D Structures, Lisbon, Portugal, May 2008.

Consulting

- 1972-73 International Engineering Company, San Francisco, California
Analysis of response of Pacoima arch dam during San Fernando earthquake
Analysis procedures to include seepage forces in concrete dam analyses
- 1972 Integral Ltda., Medellin, Colombia
Evaluation of proposed design for the intake tower for the Guatape power station
- 1972 Los Angeles Department of Water and Power
- 1972 Harding, Miller, Lawson and Associates, San Rafael, California
Earthquake engineering concepts
- 1972 Maurseth, Howe, Lockwood and Associates, Los Angeles, California
Simulated ground motions for structural design of Whittier Lutheran Towers
- 1972-78 Lindvall, Richter and Associates, Los Angeles, California
Seismic safety analysis of various structures:
- Liquid nitrogen gas tanks at Port Hueneme, Oxnard and Point Concepcion sites
- Los Angeles Reservoir outlet tower
- Big Tujunga Dam
- Crystal Springs Dam
- 1974 East Bay Municipal Utilities District, Oakland, California
Safety evaluation of Briones tower against future earthquakes
- 1974-77 Applied Technology Council
Chairman, Task Committee on Structural Analysis, Project ATC-3 for the development of new recommendations for the seismic design provisions of building codes
- 1975 Agbagbalian Associates, El Segundo, California
Earthquake response analysis of Norris Dam in Tennessee in connection with the proposed Clinch River Breeder Reactor downstream of the dam
- 1975-90 Waterways Experiment Station, U.S. Army Corps of Engineers
Procedures for analysis, design, and safety evaluation of concrete dams and intake-outlet towers for earthquake effects
- 1976-79 State of California Department of Water Resources
Earthquake safety evaluation of Thermalito Diversion Dam and Thermalito Power Plant Headworks Structure
- 1978 Engineering Decision Analysis Company, Palo Alto, California
Earthquake response analysis of Pilgrim Nuclear Power Plant - Unit 2
- 1978 T. Y. Lin International, San Francisco, California
Earthquake-resistant design of liquid storage tanks
- 1978-80 Lawrence Livermore Laboratory
Soil-structure interaction part of the Seismic Safety Margin Research Program

- 1979-81 American Association of Railroads
Computer procedures for analytical problems encountered by the railroad industry
- 1978-80 Wilson, Ihrig and Associates, Oakland, California
Ground-borne noise and vibration from rail transit operations

Consulting (continued)

- 1980-81 Integral Ltda., Medellin, Colombia
Earthquake analysis of intake towers at the San Carlos Hydroelectric Project
- 1980-84 Woodward-Clyde Consultants, San Francisco and Orange, California
Earthquake-resistant design of concrete structures at the Potrerillos Dam Project, Argentina
Soil-structure interaction analysis, South Texas Project
Earthquake Safety Evaluation of Eaton Wash Dam, Pasadena, California
- 1981-83 Lindvall, Richter and Associates, Los Angeles, California
Earthquake safety evaluation of Juncal Dam, near Montecito, California
- 1981 World Bank, Washington, D.C.
Sardar Sarovar Dam, Gujarat, India
- 1981-83 Lindvall, Richter and Associates, Los Angeles, California
Earthquake safety evaluation of Mulholland Dam
- 1981-84 Woodward-Clyde Consultants, San Francisco, California
Earthquake-resistant design of concrete structures at the Alta Sinu Hydroelectric Project, Colombia
Earthquake-resistant design of concrete structures at the La Vueltoosa Hydroelectric Project, Venezuela
- 1982-90 Sacramento District Corps of Engineers
Seismic Evaluation of Folsom Dam
- 1982-85 Woodward-Clyde Consultants, San Francisco, California
Evaluation of landslide stability and safety of Tablachaca Dam, Peru
- 1984-85 Hidroservice, Guayaquil, Ecuador
Earthquake analysis and design of powerhouse, Duale Peripa Project, Ecuador
- 1984-85 Tippetts-Abbet-McCarthy-Stratton (TAMS), New York
Evaluation of proposed blanket on spillway gates, Tarbela Dam Project, Pakistan
- 1984-85 Ben C. Gerwick, Inc., San Francisco, California
Earthquake safety of Wanapum Dam, Washington
- 1984-86 Dames and Moore, Los Angeles, California
Earthquake analysis and design of Pamo Dam, California
- 1984-86 Converse Consultants, San Francisco, California
Earthquake safety evaluation of Lake Hume and Scots Flat dams, California
- 1984-86 Woodward-Clyde Consultants, Walnut Creek, California
Earthquake safety evaluation of Old Aswan Dam and concrete structures at the project, Egypt
- 1985-87 Sacramento District, U.S. Army Corps of Engineers
Earthquake safety evaluation of Englebright Dam, California
- 1986-90 ACRES International Co., Toronto, Canada
Safety assessment of existing dams for earthquake conditions
- 1987-93 Pacific Gas and Electric Company, San Francisco, California
Seismic safety evaluation of dams and intake towers
- 1987-89 Harza Engineering Co., Chicago, Illinois
Seismic safety evaluation of Old Aswan Dam, Egypt
- 1988 Faye Bernstein and Associates, San Francisco, California
Earthquake analysis of tanks

- 1990-93 East Bay Municipal Utility District, Oakland, California
Seismic safety evaluation of Pardee Dam and Jackson Creek Spillway
- 1990-93 Central Nuclear de Almaraz, Madrid, Spain
Seismic safety evaluation of Valdecanas Dam
- 1990-93 Klohn-Crippen Consultants, Vancouver, Canada
Seismic safety evaluation of Cleveland and Seymour Falls Dams

Consulting (continued)

- 1993-94 Dames and Moore, Oakland
Seismic safety evaluation of Bull Run Dam No. 1 in Oregon
- 1993-96 Sinotech Foundation for Research and Development, Taiwan
Post-earthquake assessment of arch dams
- 1994- Division of Safety of Dams, Department of Water Resources, State of California
Consulting services for seismic safety of concrete dams
- 1995-97 E.T.S. Ingenieros de Caminos, Canales y Puentes, La Coruna, Spain
Seismic safety evaluation of Bolarque Dam
- 1996-98 Pacific Rim Power, Vancouver, B.C., Canada
Seismic design of Balambano and Karebe Dams in Indonesia
- 1996- Division of Safety of Dams, Department of Water Resources, State of California
Member, Consulting Board for Earthquake Analysis
- 1997-00 B.C. Hydro, Vancouver, B.C., Canada
Seismic safety evaluation of Seven Mile Dam
- 1997-99 Portland General Electric, Portland, Oregon
Seismic safety evaluation of River Mill Dam, Oregon
- 1998-99 California Division of Safety of Dams
Safety evaluation of Milliken Dam, California
- 1998- Panama Canal Commission, Panama City
Seismic safety evaluation of spillways, dams, and locks at Panama Canal
- 2000 Hydroestudios, Bogota, Colombia
Seismic analysis and design of Miel I Dam
- 2001 Metropolitan Water District of Southern California
Seismic safety evaluation of Lake Mathews Dam outlet tower
- 2001 Integral Ltda., Medellin, Colombia
Seismic safety evaluation of Guatape and Troneras outlet towers
- 2001 Acres International
Seismic upgrade of Casad Dam Intake Tower
- 2002-04 U.S. Army Corps of Engineers, Sacramento District
Seismic analysis and design of modifications to Folsom Dam
- 2006 University of California, San Francisco Design & Construction
Seismic evaluation of Moffitt Hospital
- 2006- Pacific Gas & Electric Co.
Seismic evaluation of Lake Alamnor Tower
- 2006- U.S. Bureau of Reclamation
Seismic evaluation of East Canyon Dam, Utah
- 2007- INTERTECHNE, Curitiba, Brazil
Seismic design of Palomina Dam, Dominican Republic
- 2007- Panama Canal Authority
Seismic evaluation of existing locks and design of new locks as part of the expansion project of the Panama Canal
- 2007- San Diego County Water Authority, San Diego, California
Design of San Vicente Dam Raise
- 2007- EDELCA, Caracas, Venezuela

Evaluation of Macagua, Guri, Caruachi and Tocomo Dams and power houses

Publications

Over 300 publications (including two books) in structural dynamics and earthquake engineering.

07/08