

CIVIL, CONSTRUCTION, AND ENVIRONMENTAL ENGINEERING

OREGON STATE UNIVERSITY

College of Engineering

SCHROEDER, W.L.

Professor Emeritus

BIRTH DATE

January 3, 1939

DEGREES

- B.S., Civil Engineering, Washington State University, 1962
- M.S., Civil Engineering, Washington State University, 1963
- Ph.D., Civil Engineering (Geotechnical Engineering), University of Colorado, 1967

ACADEMIC POSITIONS

- Research Assistant, R.L. Albrook Hydraulic Laboratory, Pullman, WA, 1962-1963
- N.D.E.A. Fellow, Civil Engineering, University of Colorado, Boulder, 1965-1967
- B.U.I.L.D. Exchange Fellow, University of Illinois, Urbana, 1966
- Assistant Professor, Oregon State University, 1967-1970
- Associate Professor, Oregon State University, 1970-1977
- Professor, Oregon State University, 1977-1998
- Professor Emeritus, Civil Engineering, Oregon State University, 1998-present
- Associate Dean of Engineering, Research and Graduate Studies, Oregon State University, 1974-1989
- Acting Head, Civil Engineering Department, Oregon State University, 1977-1978; 1988-1989
- Associate Dean of Engineering, Administration, Oregon State University, 1989-1992; 2001-2003
- Vice President/Chief Business Officer, Finance and Administration, Oregon State University, 1992-1997
- Athletic Director (Interim), Oregon State University, 1997-1998

NON-ACADEMIC POSITIONS

- Research Engineer, The Boeing Company, Seattle, WA, 1963
- Lieutenant, Corps of Engineers, United States Army, 1963-1965; Discharged, Captain, 1968
- Staff Engineer, William B. McDowell and Associates, Boulder, CO, 1965-1967 (full and part-time)
- Staff Engineer, Cornell, Howland, Hayes and Merryfield, Corvallis, OR, 1968-1971 (full and part-time)
- Vice President, Andersen Construction, Portland, OR, 1998-2000

FIELDS OF SPECIALIZATION

Soil Mechanics and Foundation Engineering

PROFESSIONAL ACTIVITIES

Registration

- Registered Professional Engineer, State of Oregon, No. 6199
- Registered Professional Engineer, State of Washington, No. 15736, retired

Professional Societies

- American Society of Civil Engineers
 - Technical Activities Committee, Planning and Budgeting (1994-1997)
 - Geotechnical Engineering Division Executive Committee, 1985-1995; (Chairman, 1989-1990)
 - National Committee on Session Programs (Chairman, 1980-1984)
 - National Committee on Earth Retaining Structures (1975-1980)
 - Oregon Section (President, 1979)
 - Geotechnical Engineering Technical Group, Oregon Section (Past Chair)
 - Oregon State University Student Chapter Adviser (1967-1971)

International Society for Soil Mechanics and Foundation Engineering, Member
Associated General Contractors of America, Affiliate
ASFE – Association of Firms Practicing in the Geosciences, Faculty Member

Professional Recognition

Friel Award, Athlete with Highest Graduating GPA, Washington State University, 1961
Carter Award (Outstanding Teacher in School of Engineering, Oregon State University, 1973-1974)
Selected among “Outstanding Educators of America,” 1975
Hoffman Award (Outstanding Professor in Construction Engineering Management Program, Oregon State University, 1980-1981)
“Outstanding Civil Engineer”, Oregon Section ASCE, 1987
Thomas Fitch Rowland Prize (Best Paper), Construction Division, American Society of Civil Engineers, 1988
Innovative Management Achievement Award (For Quality Management/Business Process Re-Engineering; First Place Nationally, 1993; Presented by NACUBO & Barnes and Noble)
“2011 Engineer of the Year”, Professional Engineers of Oregon

Committees, Commissions and Boards

Board of Directors, Associated General Contractors of America, Oregon-Columbia Chapter, 1983
Board of Directors, Construction Education Foundation (CEF)
Board of Directors, U.S. National Committee, International Society for Soil Mechanics and Foundation Engineering, 1983-1989
Board of Directors, Business Enterprise Center of Benton County, Inc., 1988
Supervisory Committee, OSU Federal Credit Union, Inc., 1988-1991
Board of Appeals, Community Services Division, City of Corvallis Building Department, 1988-2005
Board of Directors, Benton Hospice Service, Inc., 1995-2001

PUBLICATIONS

Books

Soils in Construction, John Wiley and Sons, New York, 1975; 2nd Ed., 1980; 3rd Ed., 1983.
“Caissons and Cofferdams,” Chapter 40 in *Ground Engineers Reference Book*, Butterworths, London, 1987.
Soils in Construction, Prentice-Hall, Englewood Cliffs, NJ; 5th Ed., 2004 (with S.E. Dickenson and Don C. Warrington)

Technical Journals

Discussion of “Liquefaction of Saturated Sands During Cyclic Loading,” by H. Bolton Seed and Kenneth L. Lee, (with R.L. Schuster), *Journal of the Soil Mechanics and Foundation Division*, American Society of Civil Engineers, Vol. 93, No. SM 5, September 1967.
“Laboratory Simulation of Seismic Activity in Saturated Sands,” (with R.L. Schuster), *Vibration Effects of Earthquakes on Soils and Foundations*, American Society for Testing and Materials Special Technical Publication 450, 1969.
Discussion of “Behavior of Dry Sands Under Cyclic Loading,” by D.H. Timmerman and T.H. Wu, *Journal of the Soil Mechanics and Foundations Division*, American Society of Civil Engineers, Vol. 96, No. SM 3, May 1970.
“Performance of a Thin Metal Retaining Wall with Multiple Anchorage,” (with J.C. Schwarzhoff and L.A. Hansen), *Transportation Research Record No. 616*, 1976.
“Penetration Resistance on Driven Piling,” (with L.A. Hansen), *Journal of the Construction Division*, American Society of Civil Engineers, Vol. 103, No. CO 3, September 1977.
“Performance of a Cellular Wharf,” (with D.K. Marker and T. Khuayjarernpanishk), *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 103, No. GT 10, March 1977.

- “Dispersion Estimates for Hydraulic Dredge Spoil,” (with M.R. Pyles), *Journal of the Environmental Engineering Division*, American Society of Civil Engineers, Vol. 105, No. EE3, June 1979.
- “Cellular Bulkheads and Cofferdams,” (with J.K. Maitland), *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 105, No. GT7, July 1979.
- “Model Circular Sheetpile Cells,” (with J.K. Maitland), *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 105, No. GT7, July 1979.
- “Soil Properties for Slope Stability Analysis; Oregon and Washington Coastal Mountains,” (with J.V. Alto), *Forest Science*, Vol. 29, No. 4, 1983.
- “Anchored Bulkheads with Sloping Dredge Lines,” (with Philippe Roumillac), *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 109, No. 6, June 1983.
- “Developing Geotechnical Data for Stability Management in Coastal Alaska,” (with D.N. Swanston), *Abs. Transactions*, Geological of America, May 1985.
- “Dewatering for Opal Springs Powerhouse Excavation,” (with V.W. Rybel and L. Cochran), *Journal of the Construction Engineering Management Division*, American Society of Civil Engineers, Vol. 112, No. CO3, September 1986 (Awarded Thomas Fitch Rowland Prize).
- “Slope Effects on Probe Densification of Sands,” (with P. Leycure), *Soil Improvement - A Ten Year Update*. American Society of Civil Engineers, GSP No. 12, April 1987.
- Discussion of “Sheetpile Interlock Tension in Cellular Cofferdams,” by Mark P. Rossow, *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 113, No. 5, May 1987.
- “Wharf Bulkhead Behavior at Fulton Terminal 6,” *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 113, No. 6, June 1987.
- “Bulkhead Failure Investigation and Redesign,” (with R.D. Rieke and J.C. Crowser), *Journal of the Geotechnical Engineering Division*, American Society of Civil Engineers, Vol. 114, No. 10, October 1988.
- “Cellular Sheetpile Bulkheads,” (Invited State of Practice Paper), *Design and Performance of Earth Retaining Structures*, Geotechnical Special Publication No. 25, American Society of Civil Engineers, 1990.

Conference Proceedings

- “Liquefaction Phenomena in Saturated Sands,” (with R.L. Schuster), Proceedings, Sixth Annual Symposium on Engineering Geology and Soils Engineering, Boise, ID, April 1968.
- “Stress-Strain-Time Relations for a Compacted Residual Soil,” Proceedings, Ninth Annual Symposium on Engineering Geology and Soils Engineering, Boise, ID, April 1971.
- “Compaction of Dredged Fills,” (with Marvin Byington), Proceedings, Tenth Annual Symposium on Engineering Geology and Soils Engineering, Moscow, ID, April 1972.
- “A Preload on Fine Silty Sand,” (with E.G. Worth), Proceedings, American Society of Civil Engineers, Specialty Conference on Earth and Earth-Supported Structures, Lafayette, IN, June 1972.
- “Instrumentation of a Circular Cell Bulkhead,” (with T. Khuayjarernpanishk and D. Marker), Proceedings, Twelfth Annual Symposium on Engineering Geology and Soils Engineering, Boise, ID, April 1974.
- “Factors Bearing on the Interpretation of In Situ Testing Results,” (with D.J. Dodds), Proceedings, Rapid Tunneling and Excavation Conference, AIME, San Francisco, June 1974.
- “Flow Slide Control with Slope Revetments,” Proceedings, Third National Meeting, Universities Council for Earthquake Engineering Research, Ann Arbor, MI, May 1974.
- “Consolidation of Fine Grained Columbia River Alluvium,” (with A.H. Rippe), Proceedings, Fourteenth Annual Symposium on Engineering Geology and Soils Engineering, Boise, ID, April 1976.
- “Flow Slide Control with Slope Revetments,” Proceedings, Fourth National Meeting, Universities Council for Earthquake Engineering Research, Vancouver, B.C., Canada, June 1976.
- “Influence of a Deep Silt Layer on Performance of an Anchored Bulkhead,” Proceedings, Fifteenth Annual Symposium on Engineering Geology and Soils Engineering, Pocatello, ID, April 1977.
- “Measuring and Testing Techniques for the Determination of the In-Situ State of Stress in Soils,” Proceedings, Third Annual Conference DOT Research and Development in Tunneling Technology, Atlanta, GA, October 1977.
- “The Engineering Approach to Landslide Risk Analysis,” Proceedings, USFS Workshop on Slope Stability: Problems and Solutions in Forest Management, Seattle, WA, February 1984.

- “Roads, Precipitation and Debris Torrents in Two Coastal Oregon Watersheds,” (with George W. Brown), Proceedings, Symposium on Effects of Forest Land Uses on Erosion and Slope Stability, Honolulu, HI, May 1984.
- “Underwater Construction of an Impervious Dam Core,” (with R. Phelps and A. Tigoulet), Proceedings, Twenty Fourth Annual Symposium on Engineering Geology and Soils Engineering, Coeur d’Alene, ID, March 1988.
- “Rockbolts for Anchors in Southeast Alaska,” (with P. Cole and V. Henry), Proceedings, International Mountain Logging and Pacific Northwest Skyline Symposium, Portland, OR, December 1988.

Reports and Others

- “Pavement Condition Studies,” Region 6, Forest Service, Department of Agriculture, September 1972.
- “Disposal of Sandy Pipeline Dredge Spoils by End Dumping,” (with M.R. Pyles), Preprint, ASCE National Structural Engineering Convention, New Orleans, April 1975.
- “Driving Estimates for Pile Contract Bids,” (with L.A. Hansen), AGC Education and Research Foundation, April 1975.
- “Flow Slide Control With Slope Revetments,” (with S.A. Narkiewicz), Project Report to National Science Foundation, June 1975.
- “Instrumentation of a Tied Back Wall on Mary’s Peak Road,” (with L.A. Hansen), Forest Service, Department of Agriculture, July 1975.
- “Depth and Penetration Resistance Predictions for Driven Piling,” Preprint, Northwest Bridge Engineers’ Seminar, Boise, ID, September 1975.
- “Performance of a Cellular Sheetpile Wharf,” (with D.K. marker and T. Khuayjarernpanishk), Preprint, ASCE National Convention, San Diego, CA, April 1976.
- “Development of an In Situ Stress Gage for Soils,” Report to Federal Highway Administration (DOT-FH-119173), July 1978.
- “Some Comments on Design State of the Art for Cellular Bulkheads and Cofferdams,” Preprint, ASCE Seattle Section and Geotechnical Group Meeting, Seattle, WA, April 1978.
- “Cellular Bulkheads in Deep Sands,” (with J.K. Maitland), Preprint, ASCE National Meeting, Chicago, October 1978.
- “Engineering Properties of Southeast Alaskan Forest Soils,” (with G. Filz), Civil Engineering Department, Oregon State University, Corvallis, OR, 51 pp., September 1981.
- “Engineering Properties of Oregon and Washington Coast Range Soils,” (with J.V. Alto), Civil Engineering Department, Oregon State University, Corvallis, OR, 61 pp., September 1981.
- “Internal Stability of Circular Sheet Pile Cells,” Preprint, A.I.D. Seminar, Tunis, Tunisia, August 1983.
- “Geotechnical Properties of Southeast Alaskan Forest Soils,” Civil Engineering Department, Oregon State University, Corvallis, OR, 98 pp., August 1983.
- “Creep Studies for Southeast Alaskan Forest Soils,” (with Walter Hoeffner), Engineering Experiment Station, Oregon State University, Corvallis, OR, 113 pp., July 1983.
- “Application of Geotechnical Data to Resource Planning in Southeast Alaska,” (with D.N. Swanston), U.S. Forest Service General Technical Report PNW-198, January 1987.
- “Pile Driving Studies, Terminal 2, Port of Portland,” (with G.M. Tupper), Port Contract 5000189, Oregon State University, December 1991.
- “Installation and Use of Epoxy-Grouted Rock Anchors for Skyline Logging in Southeast Alaska,” (with D.N. Swanston), U.S. Forest Service General Technical Report PNW-GTR-297, April 1992.
- “Alternate Sheetting for Shallow Trench Excavations,” (with Bill B. Zubeck), AGC Oregon Columbia Chapter Contract Report, Oregon State University, May 1993.

SEMINARS, SHORT COURSES AND INVITED ADDRESSES

- “Liquefaction During Earthquakes,” presentation to ASCE Soils and Foundations Technical Group, Portland, OR, March 1968.
- “Use of Computers in Soils Engineering,” Colloquium on Computers in Civil Engineering, OSU, Corvallis, April 1968

- “Soil Behavior During Earthquakes,” Geophysics Seminar, School of Oceanography, OSU, Corvallis, May 1971.
- “Soil Compaction and Compaction Control,” A special offering through the Associated General Contractors Continuing Education Program. One night seminars in Portland, Albany, Eugene and Coos Bay, Fall 1972.
- “Dewatering and Excavation Supports,” A special offering through the Associated General Contractors Continuing Education Program. One night seminars in Portland, Albany, Eugene, Coos Bay and Medford, Winter 1973.
- “Soils and Foundations,” Professional engineer exam review course. One night seminars in Corvallis and Portland, Winter 1973-1977.
- “Analysis of Slope Stability Problems,” A short course for land managers, OSU, Corvallis, March 1973.
- “Soils Problems in Residential Construction,” Building Inspectors’ Short Course, OSU, Corvallis, March 1973.
- “The Eighth International Conference and Points West,” presentation to ASCE Soils and Foundations Technical Group, Portland, OR, October 1973.
- “Terminal 4 Bulkhead Instrumentation,” presentation to ASCE Geotechnical Engineering Technical Group, Portland, OR, March 1974.
- “Landslides Related to Road Construction,” U.S Department of the Interior, Bureau of Land Management training session, Roseburg, OR, March 1974.
- “Slope Stability Workshop,” U.S. Department of the Interior, Bureau of Land Management, Eugene, OR, March 1974.
- “Structure Foundations,” Building Inspectors’ Short Course, OSU, Corvallis, March 1974.
- “Construction Excavations,” State Accident Insurance Fund Short Course for Safety Consultants, Salem, OR, February 1976.
- “Recent Developments in Geotechnical Engineering and Some State of the Art Comments,” OSHD Short Course on Current Transportation Technology, Corvallis, April 1976.
- “The Practice of Geotechnical Engineering,” San Diego State University Civil Engineering Department, San Diego, CA, April 1976.
- “Model Studies for Oesterschelde Caisson Foundations,” presentation to ASCE Geotechnical Engineering Technical Group, Portland, OR, November 1976.
- “Slope Stability Workshop,” Oregon State Department of Forestry, Corvallis, January 1977.
- “Analysis of Failure of a 6000 Ton Coal Storage Silo,” invited seminar, Utah State University, Logan, UT, April 1977.
- “Research on Cellular Cofferdams,” invited seminar, U.S. Army Corps of Engineers, Albuquerque, NM, February 1981.
- “The Mt. St. Helens Eruption of May 1980,” invited seminar, University of New Mexico, Albuquerque, February 1981.
- “Fundamentals of Earth Retaining Structures,” short course for Civil and Forest Engineers, Corvallis, February 1981.
- “Landslide Risk Assessment,” invited seminar, University of Idaho, Moscow, ID, April 1983.
- “Research and Education in the College of Engineering,” Greater Corvallis Rotary Club, January 1984.
- “Engineering Failures,” Corvallis Rotary Club, May 1985.
- “Dewatering for Opal Springs Powerhouse,” presentation to ASCE Geotechnical Group, Portland, OR, March 1986.
- “Analysis and Design of Cellular Cofferdams,” Short course for U.S. Army Corps of Engineers, Portland, OR, December 1987.
- “Capacity of Grouted Rock Anchors,” presentation to ASCE Geotechnical Group, Portland, OR, November 1988.
- “Bridge Foundations,” Short course for USDA Forest Service, Portland, OR, December 1988.
- “Strength of Shallow Forest Soils,” COPE Workshop on Forestry and Landslides, Newport, OR, March 1989.
- “Soil Compaction and Compaction Specifications for Construction,” seminar for construction superintendents, Associated General Contractors, Portland, OR, February 1990.
- “Waterfront Structures,” invited state of the art address, ASCE Specialty Conference on Earth Retaining Structures, Ithaca, NY, June 1990.
- “Pile Foundations-Selected Topics,” U.S. Forest Service R-11 Workshop, Corvallis, February 1991.
- “Ethical Decision Making,” MC/Facilitator for a community-sponsored workshop for Corvallis, Philomath, Monroe and Alsea high school student leaders, May 1993, 1994, 1995.

“Shear Piles for Landslide Stabilization,” presentation to ASCE Geotechnical Group, Portland, OR, December 1999.

FUNDED RESEARCH PROJECTS

AGC Oregon Columbia Chapter, Portland, “Alternate Sheeting for Shallow Trench Excavations,” \$10,000, PI, 1993
USDA Forestry Sciences Laboratory, Juneau, “Holding Capacity of Grouted Rock Anchors,” \$34,000, PI, 1987.
Pacific Northwest Forest and Range Experiment Station, Seattle, “Resistance of Skyline Anchor Stumps,” \$9,500, PI, 1982.
Pacific Northwest Forest and Range Experiment Station, Seattle, “Analysis of Cutslope Stability,” \$45,000, Co-PI, 1982.
Pacific Northwest Forest and Range Experiment Station, Portland, “Southeast Alaskan Soil Properties,” \$49,000, PI, 1982.
Pacific Northwest Forest and Range Experiment Station, Portland, “Southeast Alaskan Soil Properties,” \$9,500, PI, 1981.
Pacific Northwest Forest and Range Experiment Station, Portland, “Southeast Alaskan Soil Properties,” \$10,800, PI, 1980.
Forest Research Laboratory, OSU, “Analysis of Landslide Risk,” \$16,000, PI, 1979.
Forest Research Laboratory, OSU, “Engineering Behavior of Coastal Soils in Oregon and Washington,” \$15,000, PI, 1978.
U.S. Naval Civil Engineering Laboratory, Port Hueneme, CA, “Analysis of Cellular Wharves,” \$3,000, PI, 1977.
U.S. Department of Transportation, “An In Situ Stress Gage for Use in Soils,” \$50,000, PI, 1976.
National Science Foundation, Washington, DC, “Impact of Estuarine Dredging,” \$148,000, PI, 1976.
Delft Hydraulics Laboratory, The Netherlands, “Caisson Foundation Model Studies,” \$280,000, Co-PI, 1976.
U.S. Forest Service, Siuslaw National Forest, “Tied Back Wall Instrumentation,” \$5,000, PI, 1974.
AGC Education and Research Foundation, Washington, DC, “Driving Time Estimates in Pile Contract Bids,” \$8,000, PI, 1974.
Tuthill Foundation, “Aching in Cohesive Soils Over Circular Openings,” \$450, PI, 1974.
OSU Computer Center, “Concrete Pile Damage During Driving,” \$650, PI, 1974.
Port of Portland, “Terminal 4 Cellular Bulkhead Instrumentation,” \$40,000, PI, 1973.
National Oceanic and Atmospheric Administration (Sea Grant), “Cellular Bulkhead Wharves,” \$50,000, PI, 1973.
National Science Foundation, Washington, DC, “Flow Slide Control with Slope Revetments,” \$33,000, PI, 1972.
National Oceanic and Atmospheric Administration (Sea Grant), “Hydraulic Dredge Spoil Fate,” \$53,000, PI, 1971.
OSU General Research Fund, “Compressibility of Diatomaceous Sediments,” \$250, PI, 1970.
OSU General Research Fund, “Shear Load Transfer at the Soil-Structure Interface,” \$475, PI, 1969.

SELECTED CONSULTING ENGAGEMENTS

Coal Fired Generating Plant, Centralia, WA. Consultant to William H. Clarke and Associates, Toledo, OH, to investigate collapse of a 6000-ton coal storage silo, 1972. Owner: Washington Irrigation and Development Company (PP&L).
Kingsley Dam Powerhouse, Ogallala, NB. Board of consultants to CH2M Hill, project engineers, 1975-1984. Owner: Central Nebraska Public Power and Irrigation District.
Trident Nuclear Submarine Base, Bangor, WA. Cellular cofferdam for drydock. Instrumentation consultant to Haley and Aldrich, Boston, MA; analysis of cell failure, 1976. Owner: U.S. Navy.
Lake Keowee Water Intake Structure Cofferdam, Greenville, SC. Consultant to Law Engineering, Atlanta, GA, for investigation of collapse of 130-ft diameter cofferdam, 1978-1979. Owner: City of Greenville.
Terminal 6 Berth 603 Cargo Wharf, Portland, OR. Consultant to Moffat, Nichol and Bonney, Portland, OR, for design, construction, performance monitoring, subsequent analysis for special loading conditions and extension, 1979-1988. Owner: Port of Portland.
Lock and Dam 26(R), Alton, IL. Mississippi River cofferdam. Consultant to Shannon and Wilson of St. Louis, MO, for instrumentation, 1981. Owner: U.S. Army Corps of Engineers.
Fort McHenry Tunnel Baltimore, MD. Dredge spoil containment structure (cellular cofferdam). Performance analysis for Mueser, Rutledge, Johnston and DeSimone, New York, NY, 1983. Owner: State Highway Division

of Maryland.

- Opal Springs Hydroelectric Project, Madras, OR. Consultant for Kiewit Pacific Company, Vancouver, WA, for construction dewatering, 1983. Owner: Deschutes Valley Water District.
- Take Public Docks, Take, AK. Consultant for investigation of collapse of 300-ft-long anchored bulkhead wharf structure, 1984. Owner: City of Take.
- Seward Marine Industrial Park, Seward, AK. Evaluation of breakwater design for arbitration hearing, 1985. Owner: City of Seward.
- Terminal 2 Rehabilitation, Portland, OR. Evaluation of retaining structure and dock alternates, liquefaction analysis, dredged fill and slope stability studies for Dames and Moore, Portland, OR, 1985-1988. Owner: Port of Portland.
- Dog Creek Bridge, I-5, Shasta, CA. Design and construction of mini-pile supports for falsework for Hamilton Construction Company, 1987-1988. Owner: State of California.
- Shoring Wall Failure, Seattle, WA. Analysis of support failure for reservoir excavation for Applied Geotechnology, Inc., Bellevue, WA, 1989-1991. Owner: Sammamish Plateau Water and Sewer District.
- Lower Percy Landslide, Leaburg, OR. Consultant to Landslide Technology, Portland, for design of slide stabilization using drilled shafts, 1991.
- Underwriters' Laboratories, Camas, WA. Peer review of analysis of site liquefaction risk due to earthquakes. Consultant for L.R. Squier Associates, Inc., Lake Oswego, OR, 1992. Owner: Underwriters' Laboratories.
- Terminal 6 Berths 604-605 Cargo Wharf Expansion, Portland, OR. Consultant to Port of Portland for design of new container crane supports, 1993. Owner: Port of Portland.
- Winfield Locks and Dam, Charleston, WV. Consultant to Kiewit Construction Company for dewatering, excavation and fill placement for lock addition, 1993-1994. Owner: U.S. Army Corps of Engineers.
- Grouse Creek Mine, Stanley, ID. Consultant to Industrial Constructors Corporation for stability evaluation of massive landslide and mediation of dispute, 1993-1994. Owner: Hecla Mining Corporation.
- Barney Reservoir Expansion, Trask River, OR. Board of Review for earth dam raise and reservoir expansion from 4000 to 20,000 acre feet, 1994- Present. Owner: Barney Joint Commission.
- Collins Bay A and B Zone Cofferdams, Wollaston Lake, Saskatchewan, Canada. Consultant to AGRA Earth and Environmental on cofferdam design for uranium open pit mine in Wollaston Lake, 1994-Present. Owner: CAMECO Corporation.
- Bear Track Mine, Salmon, ID. Consultant to Gilbert Pacific Corp. for claim on clay liner placement for heap leach gold mining facility, 1995. Owner: FMC Corporation.
- Domenigoni West Dam, Winchester, CA. Consultant to Kiewit Pacific Company for differing site conditions analysis on earth dam foundation excavation, 1995. Owner: Metropolitan Water District of Los Angeles.
- Belleville Powerhouse, Parkersburg, WV. Consultant to Guy F. Atkinson and F&D Surety for resolution of a claim regarding the cofferdam for powerhouse construction adjacent to Belleville Dam , 1996-2001. Owner: Omega JV
- Kinross Mine Cofferdam, Ontario, Canada. Consultant to AMEC Earth and Environmental for design. 2002. Owner: Kinross Corp.
- Swift No.2 Embankment Failure, Cougar, WA. Consultant to CH2M Hill for investigation of breach in hydro power canal dike. 2002. Owner: Cowlitz County PUD.
- John Day Dam, Biggs, OR. Review board to evaluate lock distress on Columbia River Dam and recommend corrections, 2003. Owner: US Army Corps of Engineers.
- Terminal 6, Berth 604-605 Modifications and Seismic Upgrade, Portland. Consultant to Westmar for design of wharf modifications, 2004-2010. Owner: Port of Portland.