

CURRICULUM VITAE - PATRICK O. SHIRES

President
Senior Principal Geotechnical Engineer
Senior Principal Geophysicist

Current Address

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Registration

Registered Geotechnical Engineer in California, Registered Geophysicist in California
Registered Professional Civil Engineer in California, Colorado, Hawaii, Idaho, Oregon, and
Washington

Education

M.S., Civil Engineering: Stanford University, Stanford, California, 1975
B.S., Stanford University, Stanford, California, 1972

Representative Experience

As Senior Principal in Charge of all CSA civil and geotechnical engineering projects, Mr. Shires's responsibilities range from investigation, analysis and product review to final design participation and project management for large projects. Mr. Shires remains actively involved in the engineering investigation, design, construction, and review for technical investigations. In addition, he is qualified as an expert witness in Civil/Geotechnical Engineering and has testified at over 80 trials and binding arbitrations as an expert witness, including trials resulting in landmark legal decisions involving natural watercourse, earth movement and construction dispute issues.

Mr. Shires has over 41 years of professional experience in the fields of civil and geotechnical engineering throughout the western United States. In the early part of his career, he supervised the technical investigation and engineering analyses for many water and wastewater treatment and distribution facilities, dams, nuclear- and fossil-fuel power plant and high-rise building sites throughout the western United States. He investigated over 50 dam sites and was the chief design engineer for a 160-foot high rockfill dam in Arizona.

At his present position, Mr. Shires has specialized in slope stability investigations on over 500 landslide projects, 50 of which have been in southern, 25 in central, and over 400 in northern California, and 12 in Hawaii. He has supervised many major landslide investigation projects, including the Big Rock Mesa (Malibu), Rambla Pacifico (Malibu), Anaheim Hills and Sycamore Canyon (Santa Barbara) landslides in southern California; the Love Creek, Permanente Quarry, Eliot Quarry, Telegraph Hill and hundreds of other landslides in northern California; and the Manoa, Ailuna-Leighton and other landslides in Hawaii, as well as flooding issues associated with major storm events on three islands of Hawaii. In addition, he has specialized in the investigation of failures associated with river and creek flooding, including dam and levee failure and design issues. Mr. Shires regularly participates in International Field Workshops on Landslides, including workshops in Japan, Australia, New Zealand, Switzerland, Austria, Italy, Czech Republic, Slovak Republic, Spain, England and Norway. He is experienced in the use of

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sophisticated slope stability analysis tools, including two- and three-dimensional limit equilibrium methods and finite element modeling.

Mr. Shires has specialized in the design of remedial measures for dealing with drainage and slope stability problems, including the design of grading plans, retaining wall structures, shear pins, tiebacks and extensive drainage works. He has worked on numerous dam projects, including design, remediation, monitoring and interaction with various governing agencies. He has been the chief design engineer on over 120 landslide repair projects, including designing a coastal revetment to protect the Esplanade Avenue bluff in Pacifica and extensive slope repairs to protect homes below the Knockash Hill rockslides in San Francisco. He was retained by the Chinese government to work on the Yangtze Water Resource Commission's Three Gorges Dam project in China and was the MTA geotechnical engineering expert for their Redline Tunnel distress litigation in Los Angeles. His areas of expertise include:

- Landslide mitigation and flooding and levee stability
- Dams, waterway and coastal engineering and design
- Geotechnical design for water and wastewater facilities
- Grading (filling & excavation) design and practice
- Roadway, parking, pavement and drainage design
- Earth movement expert
- Foundation design
- Retaining wall design
- Expansive soil design
- Construction inspect/test

As Principal Geophysicist, Mr. Shires has conducted numerous geophysical investigations throughout the western United States, from small-scale studies of rippability for grading to providing Quality Assurance for investigations at P.G.&E.'s nuclear power plants in California to investigations of numerous dam sites. Over the past 38 years, he has conducted and managed a wide variety of geophysical studies, and has provided expert witness services, including:

- Seismic and radio-detection surveys for pipelines
- Surface surveys for regional seismic analyses
- Reflection surveys for fault investigations
 - Surface and downhole seismic surveys for landslide investigations
 - Seismic studies of waste disposal landfills and tailings dumps
 - Downhole, crosshole and/or surface seismic surveys for over 30 dams
 - Over 100 seismic studies of rippability for grading construction
- Gravity and seismic surveys for tunnels
- Magnetic and earth resistivity surveys for environmental hazards exploration

Professional History

President, Senior Principal Engineer, Senior Principal Geophysicist, 1983 - Present; Cotton, Shires and Associates, Inc., Los Gatos, California

Supervising Geotechnical Engineer and Geophysicist, 1972-1983; Earth Sciences Associates, Inc., Palo Alto, California

Professional Affiliations

American Society of Civil Engineers
American Underground Association
Earthquake Engineering Research Institute
Society of Exploration Geophysicists

American Society for Testing and Materials
California Geotechnical Engineers Association
Bay Area Geophysical Society
Consulting Engineers Association of California

Appointments

Industrial Research Associate: United States Geological Survey, Menlo Park, California

Past Member / Chairman: Architectural Site Control Commission, Portola Valley, California

Expert Consultants Panel Member: City of Rancho Palos Verdes, California

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Arbitrator: California Ridge Development, San Jose, California

Independent Geotechnical Expert: Rancho Solano Development, Fairfield, California; Knockash Hill Rockslides, San Francisco, California; Buck Center/Partridge Knolls Landslide, Novato, California; Jackson Meadows Subdivision Slope Stability, Morgan Hill, California.