

Exponent®
Engineering & Scientific Consulting

Juan F. Perri, Ph.D., P.E., G.E.

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Professional Profile

Dr. Perri specializes in soil mechanics, geotechnical engineering, foundation engineering, and earthquake engineering. He has over 20 years of experience conducting civil engineering studies in multiple states, Europe, and several countries in North, Central, and South America.

Dr. Perri has extensive experience in the evaluation of flood control systems, including canals, dams, and levees, as well as in the study and evaluation of underground pipelines and buried structures, foundations, retaining structures, mass grading, and landslides. He provides engineering consultation to clients looking for evaluation of cause and origin of failures, risk assessment, mitigation alternatives, and proactive technical reviews of design and construction documents.

Dr. Perri has completed a full range of geotechnical studies for levee systems, reservoir dams and mine tailings dams, involving the development of exploration plans, site characterization, seepage evaluation, strength characterization, static slope stability analyses, erosion potential evaluation, probabilistic risk assessment, liquefaction analyses, and seismic vulnerability assessments. In addition, he has worked on the development and evaluation of preliminary alternative designs for remediation of levee deficiencies and liquefaction mitigation through ground improvement. He has performed canal inspections and worked on the expansion of the Panama Canal. Dr. Perri has a background in arctic engineering, including evaluation of depth of freeze and thaw in soils, the physical and thermal properties of frozen ground, pile capacity in permafrost and thawing ground, and has experience with projects in Siberia and in the State of Alaska. Dr. Perri has strong expertise in mass grading, slope creep, slope stability and landslides, slope stabilization measures, design and testing of ground anchors and soil nails, evaluation of fly-ash embankments, structural and geotechnical instrumentation and monitoring, rigid and flexible retaining walls, including Mechanically Stabilized Earth (MSE) walls, foundation design, soil interaction with pressurized and gravity pipelines, commercial buildings, design and analyses of tunnels, earth pressures, moisture intrusion, expansive soil, stiff fissured clays, peat, ground subsidence, soil settlement, collapsible soils, sensitive soils and design of pile foundations for offshore structures. He has also completed evaluations of soil improvement systems such as wick drains, stone columns, deep soil mixing (DSM), rigid inclusions, piled embankments, and compaction grouting. Dr. Perri has also experience in conducting studies on ground vibrations, site amplification, wave propagation, liquefaction, and lateral spreading. He has worked on the design of static and seismic ground improvement systems, deep excavations, embankments, and deep and shallow foundations for hospital buildings. Dr. Perri has international experience in the countries of Venezuela, Mexico, Peru, Ecuador, Colombia, Brazil, Panama, Nicaragua, Costa Rica, Italy, Poland, Vietnam, and Canada.

Dr. Perri's doctoral research focused on geotechnical earthquake engineering, deep foundations for offshore structures, geotechnical constitutive modeling, and human factors in geotechnical engineering failures. At the University of California, Berkeley, he served as a graduate student researcher and was the teaching assistant for six graduate and undergraduate courses in soil mechanics, waste containment systems, risk assessment, and strong motion seismology.

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Academic Credentials & Professional Honors

Ph.D., Ocean Engineering, University of California, Berkeley, 2007

M.S., Civil and Environmental Engineering, University of California, Berkeley, 2006

M.S., Ocean Engineering, University of California, Berkeley, 2003

B.S., Civil Engineering, Politecnico di Torino, Italy, 2002

M.S., Civil Engineering, Politecnico di Torino, Italy, 2002

Management of Technology Certificate, University of California, Berkeley, 2005

Delegate for Venezuela in the 3rd International Young Geotechnical Engineer Conference, Osaka, Japan, 2005

Licenses and Certifications

Professional Engineer Civil, Alaska, #118403

Professional Engineer Civil, California, #75084

Professional Engineer Geotechnical, California, #3063

Professional Engineer, Colorado, #PE.0050122

Professional Engineer, Michigan, #6201315468

Professional Engineer, Montana, #PEL-PE-LIC-49189

Professional Engineer, New Jersey, #24GE05833900

Professional Engineer, North Dakota, #PE-27368

Professional Engineer Civil, Oregon, #85888PE

Professional Engineer Geotechnical, Oregon, #85888PE

Professional Engineer Civil, Texas, #142543

Professional Engineer, Washington, #20113776

Prior Experience

URS Corporation, Engineer, Geotechnical Engineering Department, 2007-2010

GeoCities Engineering, Consultant, 2004

Geohidra, Geotechnical Design Engineer, June-July 2003

Geodata, Geotechnical Design Engineer, March-July 2002

Professional Affiliations

American Society of Civil Engineers—ASCE

Languages

Italian

Spanish

Publications

Perri JF and Pestana JM. Ground Motion Analysis with the Use of the Short-Time-Response-Spectrum. Journal of Earthquake Engineering, p. 1363-2469, 2016, doi: 10.1080/13632469.2016.1174752.

Perri JF, Sykora, DW. Analysis, monitoring and repairs of a slope failure in an industrial development. XX Venezuealan Geotechnical Seminar. Challenges in Geotechnical Practice ("Desafíos en el Ejercicio de la Geotecnia"). Caracas, Venezuela, 2012.

Perri JF, Shewbridge SE, Cobos-Roa DA, Green RK. Steady state seepage pore water pressures influence in the slope stability analysis of levees. Geotechnical Special Publication No. 225, Proceedings, 2012 GeoCongress, Oakland, CA, 2012.

Perri JF, Pestana JM. Selección de registros sísmicos para aplicaciones de ingeniería con el uso del Short-Time-Response (Ground motion selection for engineering applications with the use of the Short-Time-Response-Spectrum). XIX Seminario Venezolano de Geotecnia, Caracas, Venezuela, 2010.

Perri JF, Shewbridge SE, Millet R, Huang W, Vargas J, Inamine M, Mahnke S. Site factor for use of velocity-based EFA erosion rates. Proceedings, 5th International Conference on Scour and Erosion (ICSE5), San Francisco, CA, 2010.

Huang W, Shewbridge SE, Perri JF, Millet R, Vargas J, Inamine M, Mahnke S. Levee erosion screening process. Proceedings, 5th International Conference on Scour and Erosion (ICSE5), San Francisco, CA, 2010.

Shewbridge SE, Perri JF, Mineart P, Millet R, Huang W, Vargas J, Inamine M, Mahnke S. Levee erosion prediction equations calibrated with laboratory testing. Proceedings, 5th International Conference on Scour and Erosion (ICSE5), San Francisco, CA, 2010.

Huang W, Millet R, Shewbridge SE, Perri JF, Vargas J, Inamine M, Mahnke S. Levee erosion screening process. 30th USSD Annual Meeting and Conference, Sacramento, CA, 2010.

Perri JF. Geotechnical assessment of levee performance. Invited speaker for the 50th Anniversary of the Venezuelan Geotechnical Society, Caracas, Venezuela, 2008.

Perri JF, Pestana JM, Aubeny C. Modeling soil deformation and excess pore pressure generation around a closed ended pile in soft clays. XIII Pan-American Conference on Soil Mechanics and Geotechnical Engineering, Margarita Island, Venezuela, 2007.

Perri JF, Pestana JM. Use of the short time response spectrum for selection of spectrally matched ground motions. 4th International Conference on Earthquake Geotechnical Engineering, Thessaloniki, Greece, June 25-28, 2007.

Perri JF, Pestana JM. Analyses of ground motiones for seismic studies using the short-time-response-spectrum. UCB/ GeoEngineering Report No. UCB/GE/2006-01, Department of Civil and Environmental Engineering, University of California, Berkeley, June 2006.

Perri JF, Dreger, DS. Seismic waveform modeling offshore of southern California: The 2002 Santa Barbara Island, California, earthquake. Conference Commemorating the 100th Anniversary of the 1906 Earthquake, San Francisco, CA, 2006.

Perri JF, Pestana JM, Bea RG. Applications of the short-time-response-spectrum. Conference Commemorating the 100th Anniversary of the 1906 Earthquake, San Francisco, CA, 2006.

Perri JF. The observational method and the human and organizational factors in the failure of a retaining wall. Official delegate for Venezuela in the 3rd International Young Geotechnical Engineer Conference, Osaka, Japan, 2005.

Perri JF, Bea RG, Pestana JM. The short-time-response-spectrum. UCB/GeoEngineering Report, Department of Civil and Environmental Engineering, University of California, Berkeley, CA, 2005.

Perri JF. Reliability study on the temporary support of ‘La Linea Tunnel' for the Metropolitanian Railway in Los Teques-Venezuela. Seminario Internacional ‘South American Tunnelling,' Sao Paulo, Brazil, 2004.

Argoul P, Ceravolo R, De Stefano A, Perri JF. Instantaneous estimators of structural damping from linear time-frequency representations. 3rd World Conference on Structural Control, Como, Italy, 2002.

Other Workshops, Seminars, Meetings, and Training Attended

"Dam Safety 2017," Association of State Dam Safety Officials, San Antonio, TX, September 10-14, 2017.

Cold Regions Engineering Short Course, University of Washington, Seattle, WA, October 27-31, 2016.

"Dam Safety 2016," Association of State Dam Safety Officials, Philadelphia, PA, September 11-14, 2016.

Project Experience

Dr. Perri evaluated seismic loading design standards and their implementation to the design of subway stations in the Metro de Lima, Peru project. Dr. Perri evaluated the underground stations’ seismic performance expectations for operational and non-collapse conditions and performed racking and wave propagation analyses using non-linear soil constitutive models.

Completed a geotechnical evaluation of site conditions to provide consulting services in resolving a differing site condition dispute between the owner and the general contractor. Completed a review of the design and construction documents, performed surface and subsurface explorations, completed geotechnical analyses, excavation and embankment quantities.

Performed a range of geotechnical analyses in the evaluation of expansive soil and bedrock that affected a multi-story structure in Colorado. The analyses included site investigations, analyses of surface and subsurface data, heave characterization, evaluation of potential remaining heave, and assessment of repairs alternatives.

Evaluated large deformations and bulging developed in a relatively new Mechanically Stabilized Earth (MSE) retaining wall at a large industrial development outside the US and recommended stabilization methodologies. The approximately 65 meter-long (215 feet), 17 meter-high MSE wall supports an approximately 14 meter-high compacted earth embankment (total high greater than 100 feet).

Dr. Perri has been the lead reviewer of multiple pipeline projects, including failure analyses of pipelines due to ground movement and has performed a wide range of analyses for the evaluation of geotechnical threats to underground pipelines, such as landslides, fault creep, liquefaction, expansive soil and ground subsidence.

Dr. Perri reviewed the design of a heavy structure founded in geotechnically adverse permafrost terrain and environmentally severe arctic conditions. The adverse conditions included a spatially complex and uncertain permafrost salinity effects at the site. Dr. Perri evaluated the results of pile load tests and the effects of potential thawing of the permafrost due to construction of a piled foundation system.

Participated in the evaluation of flood control systems, providing service for the US Army Corps of Engineers (USACE) and the California Department of Water Resources (DWR). Work included management of the geotechnical analyses task for the evaluation and assessment of levee performance in urban areas in California and the development of procedures for the evaluation of the systems' expected geotechnical performance. The engineering analyses included site characterization, seepage analyses, strength characterization, static stability analyses, erosion potential evaluation, liquefaction triggering evaluation, and seismic vulnerability assessment of existing levees. In addition, participated in the development and evaluation of preliminary alternative designs for remediation of levee deficiencies.

Supported an external panel of experts in the strength selection and characterization of geotechnical materials expected to be encountered in the Central Valley of California. In addition, supported an external panel of experts in their assessment of the erosion potential evaluation procedures and material characterization for erosion analyses of the levee system.

For levees protecting non-urban areas in the Central Valley of California, participated in the evaluation of available levee past performance, as well as geotechnical, geological, geomorphologic, and topographical data. Participated in field inspections of the current conditions of canals in California and in the analyses and evaluation of the existing conditions of a reservoir in San Francisco. Performed site characterization, liquefaction triggering analyses and post-liquefaction assessment and designed foundations and soil improvement systems (stone columns and compaction grouting) for multi-story buildings.

Analyzed the causes of a slope failure and assessed remediation alternatives, while monitoring the slope and adjacent structures. Reviewed and provided recommendations for mass grading plans and design and construction of flexible and rigid retaining structures.

Dr. Perri, participated in the geotechnical design of dams and foundation characterization for the expansion of the Panama Canal, and in the assessment of ship grounding impact on the proposed dams' performance. In Venezuela, implemented advanced numerical soil models for analyses of an embankment for a railroad, developed attenuation relationships from the measurements of tunnel excavation with explosives, and participated in the design of the temporary and permanent tunnel support, including static and seismic loads, for a railroad tunnel. Also in Venezuela, participated in the design of pile foundations in the Plataforma Deltana area. In Italy, participated in the design of retaining structures under an existing historical railway station.

Peer Reviews

Journal of Earthquake Engineering

ISSMGE International Journal of Geoengineering Case Histories

XIII Pan-American Conference on Soil Mechanics and Geotechnical Engineering, Margarita Island, Venezuela, 2007