

Exponent®
Engineering & Scientific Consulting

Vito Schifano, Ph.D., P.Eng.

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Professional Profile

Dr. Vito Schifano is a geotechnical engineer with over 25 years of combined experience in geotechnical consulting, design, construction management and forensic investigations in a variety of industry sectors.

Dr. Schifano has provided expert engineering support for disputes and insurance claims involving residential, commercial, industrial, infrastructure, mining, and natural resource losses. His dispute and claims consulting experience includes failure analysis of tunnels, shafts, slopes, foundations, deep excavations, soil retaining systems, dewatering systems, construction-related building damage, embankments, mine waste and tailings dams, sinkholes, swelling soils, waste containment systems, and contaminated soils. He has provided expert assistance to legal teams, contractors, and insurers, including written reports and specialized expert witness testimony for arbitrations and trials.

His technical work spans geotechnical engineering, geoenvironmental engineering, mining, contaminated land, and waste disposal facilities. He has led or teamed on projects involving dams, embankments and slope stabilization design, foundation design and testing, excavation support, dewatering, mine tailings storage facilities, closure of waste impoundments (uranium tailings, sediments, coal ash and refinery sludge), and brownfield and contaminated land redevelopment.

Dr. Schifano has expertise in integrated remediation, closure and redevelopment of contaminated sites and marginal land using soil mixing based ground improvement and remediation technologies such as in-situ solidification/stabilization with binders, in-situ chemical oxidation, and electrical ground treatment. He has applied these methods to mining waste tailings disposal facilities, oil refinery impoundments, sediments confined disposal facilities, and industrial waste impoundments across North America, Europe, and China.

Prior to Exponent, Dr. Schifano held senior geotechnical and leadership positions with 30 Forensic Engineering, Golder Associates, ARCADIS, and URS Corporation, and worked as an independent consultant on international remediation and closure projects. He earned a Ph.D. in Geotechnical Engineering from the University of Illinois at Urbana-Champaign, an M.Sc. in Soil Mechanics and Environmental Geotechnics from Imperial College London, and a Laurea in Civil Engineering from the University of Palermo. He is licensed as a Professional Engineer in Italy, the United States, and Canada, and is a Chartered Engineer and Member of the Institution of Civil Engineers in the United Kingdom.

Academic Credentials & Professional Honors

Ph.D., Geotechnical Engineering, University of Illinois at Urbana-Champaign, 2001

M.Sc., Soil Mechanics and Environmental Geotechnics, Imperial College, University of London, 1993

B.Sc., Civil Engineering, University of Palermo, 1991

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Recipient of Ralph B. Peck Scholarship, 1997

Fulbright Scholar, 1993–1995

Recipient of University of Palermo Scholarship for Specialization Studies Abroad, 1995

Recipient of SERC UK Scholarship, 1992

Phi Kappa Phi Honor Society

Licenses and Certifications

Professional Engineer, Alberta, #288504

Professional Engineer, British Columbia, #64226

Professional Engineer, Ontario, #100546273

Academic Appointments

Lecturer, Laboratory Techniques in Soil Mechanics — CE 383, University of Illinois at Urbana-Champaign, Fall 1998–Fall 2000

Teaching Assistant, Soil Mechanics and Foundation Engineering — CE 280, University of Illinois at Urbana-Champaign, Fall 1996–Spring 1998

Lecturer, Soil Mechanics and Foundation Engineering — CE 280, University of Illinois at Urbana-Champaign, Spring 1996

Teaching Assistant, Geo-environmental Engineering — CE 389, University of Illinois at Urbana-Champaign, Spring 1994

Prior Experience

National Practice Lead — Geotechnical and Mining, 30Forensic Engineering, Toronto, ON, September 2018–Present

Independent Consultant / Owner, Italy, January 2016–February 2019

Senior Geotechnical Engineer / Technical Expert, Golder Associates, Montreal and Boston, August 2012–October 2015

Associate Vice President / Principal Geotechnical Engineer, ARCADIS, Boston, MA, 2008–2012

Principal Engineer, ARCADIS, Newmarket, UK, 2003–2008

Senior Geotechnical Engineer, URS Corporation Inc., Seattle, WA, 2001–2002

Professional Affiliations

ISSMGE – Forensic Geotechnical Engineering Technical Committee (TC 302)

ASCE Geo-Institute Geo-Environmental Engineering Committee

Deep Foundation Institute — Soil Mixing Committee

Canadian Geotechnical Society — Member

Institution of Civil Engineers — Member (MICE)

STARNET, Stabilization/Solidification Treatment and Remediation Network — Member

SedNet, European Network on Sediment Management — Member

Publications

Schifano, Vito. "Soil Mixing Innovation for Land Restoration." Geo-Strata Magazine, July 2013.

Collins, Christopher, Lothian, Daniel, and Schifano, Vito. “Remediation of Soils Contaminated by Petrol and Diesel Using Lime.” Land Contamination and Reclamation, 17, 2009, pp. 237–244.

Schifano, Vito, et al. "Evaluation of Quicklime Mixing for the Remediation of Petroleum Contaminated Soils." Journal of Hazardous Materials, 141, 2007, pp. 395–409.

Schifano, V. “Electrical Treatment of Clays.” Ph.D. Dissertation, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, 2001.

Mesri, G., Al-Zoubi, M., Schifano, V., and Shahien, M.M. “Lime Treatment of Brenna Clay.” Report DACW 37–99, United States Army Corps of Engineers, St. Paul District, MN, 1999.

Schifano, V. “Electrokinetic Remediation of Clays.” M.Sc. Thesis, Soil Mechanics and Environmental Geotechnics, Imperial College, University of London, 1993.

Schifano, V. “Consolidation Process in Double Porosity Media.” University of Palermo, Department of Structural and Geotechnical Engineering, 1991.

Presentations

Fahmy, A., and Schifano, V. “Tied-Back Sheet Pile Wall Collapse – A Case Study.” Proceedings article, World Congress on Civil, Structural, and Environmental Engineering, March 2023.

Schifano, Vito, and Gerressen, Franz-Werner. “Environmental Applications of Soil Mixing.” Deep Foundation Institute, Deep Soil Mixing Conference, Gdansk, Poland, June 17, 2021.

Schifano, Vito. “In-Situ Soil Reagent Mixing Technologies for Integrated Remediation and Restoration of Contaminated Sites.” SmartRemediation Conference, Canada, February 4, 2021.

Schifano, Vito. “Geotechnical Challenges in Management of Tailings Storage Facilities.” Mining Insurance and Risk Association Conference, Toronto, November 4–5, 2019.

Schifano, Vito, and San Nicolò, Lorenz. “Bonifica integrata con il riutilizzo di siti contaminati: la tecnologia ISCOSS.” SiCon 2019 Workshop on Contaminated Sites: Remediation Experiences and Cases, 2019.

Schifano, Vito, and Lilley, Frank. “Solidification / Stabilization Remediation of Acid Organic Waste for Impoundment Closure.” Submitted to the 8th International Congress on Environmental Geotechnics, Hangzhou, China, October 18–21, 2018.

Schifano, Vito. “Innovative Soil Mixing Technologies: Cost-Effective Solutions for the Remediation of Complex Sites and Mega-Sites.” 5th International Forum & Exhibition on Contaminated Site Remediation,

Shanghai, May 4–6, 2017.

Schifano, Vito. “Binder Stabilization with Beneficial Use of CCR in Closure-Remediation / Corrective Actions of Coal Ash Impoundments.” World of Coal Ash Conference, Nashville, May 5–7, 2015.

Schifano, Vito. “Binder Stabilization Technologies for Closure and Corrective Actions at CCR Impoundments.” Wastewater-Ash/PCUG Conference, Birmingham, September 2014.

Schifano, Vito. “Soil Mixing Innovation for Land Restoration.” ASCE Geo-Institute, Geo-Strata Magazine, 2013.

Chwalibog, Adam, Carrillo-Sheridan, Margaret, and Schifano, Vito. “In-situ Solidification / Stabilization (ISS) Treatability Testing and Implementation at Former Manufactured Gas Plant Sites.” MGP 12, Chicago, 2012.

Rogoff, Eric, Fisher, Thomas, Schifano, Vito, and Thompson, William. “High Resolution TarGOST/CPT Characterization of DNAPL and Evaluation of Remediation Trenches using MVS.” MGP 12, Chicago, 2012.

Schifano, Vito, et al. “Beneficial Reuse of Dredged Sediments, Soils and Coal Combustion Products for Reclamation of a Refinery Surface Impoundment.” 7th International SedNet Conference: Sediments and Biodiversity: Bridging the Gap Between Science and Policy, Venice, Italy, April 2011.

Schifano, Vito, et al. “Stabilization of Oily Sediments for Cap Closure of a Refinery Oxidation Pond.” International Solidification/Stabilization Technology Forum, Sydney, Canada, June 2010.

Schifano, Vito, and Fabian, Kristof. “A Laboratory Study of Binder Stabilization of Oily Refinery and Dredged Marine Sediments.” GeoFlorida 2010: Advances in Analysis, Modelling, and Design, West Palm Beach, USA, March 2010.

Fabian, Kristof, and Schifano, Vito. “Design and Pilot Test of Binder Stabilization of Oily Refinery and Dredged Marine Sediments.” GeoFlorida 2010: Advances in Analysis, Modelling, and Design, West Palm Beach, USA, March 2010.

Schifano, Vito, and Thurston, Neil. “Remediation of a Clay Contaminated with Petroleum Hydrocarbons using Soil Reagent Mixing.” 22nd Annual International Conference on Soils, Sediments and Water, Amherst, USA, October 2007.

Collins, Chris, Lothian, Dan, and Schifano, Vito. “Remediation of Petroleum Contaminated Soils by Lime Addition.” 18th World Congress of Soil Science, Philadelphia, USA, July 2006.

Schifano, Vito, et al. “Remediation of Soils Contaminated with Petroleum Hydrocarbons using Quicklime Mixing.” International Conference on Stabilization/Solidification, Treatment and Remediation, Cambridge, UK, April 2005.

Fabian, Kristof, Schifano, Vito, et al. “The Design of the Upstream Expansion of a Double-Lined Tailings Impoundment.” ASDSO Tailings Dams 2002, Las Vegas, USA, May 2002.

Project Experience

Forensic Geotechnical Investigations

- Investigated the causation of the failure of a gold mine tailings dam built with the upstream construction method in Northern Canada and provided recommendation for the remediation and reconstruction of the same.
- Investigated the causation of tunnel lining damage and water inflow at multiple locations for the treatment plant outfall in North America.
- Evaluated significant inflow and tunnel liner damage for the Toronto Coxwell Bypass Tunnel where the TBM alignment crossed a geothermal well system.
- Investigated failure of a TBM tunnel shaft for the Fairbank-Silverthorn Flood Relief Project in Toronto, including failure at an exploratory window, sinkhole formation, and dewatering efficiency.
- Assessed the effects of tunnelling and cut-and-cover excavation on existing gas mains for the Toronto-York Spadina Subway Extension.
- Analyzed tunnelling-induced ground movements and building damage for the Edmonton Valley Light Rail Transit project.
- Supervised a geo-structural investigation for the Vancouver Broadway Subway Station to assess tender and post-tender pile designs in a transition tunnel.
- Investigated a subaqueous failure of earth berm for land reclamation over soft, sensitive soils at a manufacturing facility in Saint John, New Brunswick.
- Investigated failures of shallow and deep foundations related to frost action, swelling soils, soft sensitive clays, vibrations, shale foundation degradation, chemical spills, construction conditions, and changes in soil conditions.
- Assessed failures involving retaining walls, soil nail walls, mechanically stabilized earth walls, gabion walls, sheet pile systems, bulkheads, culverts, shoring systems, and deep excavations across Canada.

Excavation Support, Foundation Engineering and Ground Improvement,

- Designed soft railway and highway subgrade improvement in Quebec and Ontario using binder stabilization and bench-scale treatability testing.
- Designed cuts, excavations, monitoring systems, warning systems, and dewatering systems in soft soils, cohesionless soils, and residual soils.
- Designed and managed construction of earth support systems, including sheet pile walls, soldier pile walls, timber crib walls, soil nail walls, mechanically stabilized earth walls, soil mix continuous walls, and discrete panel walls.
- Evaluated a soldier pile and tieback wall for temporary and long-term hillside support near a residential building in Washington, including slope stability analyses and construction monitoring.
- Designed shallow foundations and concrete, steel, timber, and helical pile foundations, including earthquake ground response and pile foundation performance analyses.
- Investigated soil and foundation response to large accidental chemical spills at industrial buildings and developed mitigation recommendations.

Tailings, Mine Waste & Sediments Containment Facilities

- Led feasibility-level geotechnical design for a tailings storage facility, water management facilities and transportation infrastructure at the Bombore Gold Mining Project in Burkina Faso, coordinating geotechnical, civil, water resources, and geoscience disciplines.
- Designed closure of a uranium tailings storage facility in Ontario using a cement-solidified and stabilized tailings cover system to minimize radon emanation and radionuclide leachability.
- Conducted yearly safety inspections of tailings dikes at Wabush Iron Mine in Labrador
- Performed engineering design for the upstream expansion of a double-lined tailings impoundment at Kettle River Operations in Washington, including static and seismic stability, settlement analysis, and full-scale field testing.
- Designed a subaqueous cap remediation scheme for the 50-acre Pacific Sound Resources Superfund Site in Puget Sound, including slope stability, consolidation, and liquefaction analyses.
- Designed an offshore confined disposal facility for dredged sediments at Esquimalt Harbour, including sediment dewatering, solidification/stabilization, and an in-situ vertical low-permeability barrier.
- Performed landfill closure and expansion analyses, including surcharging, settlement, liquefaction, and static and seismic stability during construction phases.

Brownfield Redevelopment & Industrial Waste Remediation

- Led remediation design for the Riverbanks residential redevelopment of a 30-acre former fuel terminal in East Providence, including contaminated soil excavation, soil nail wall support, biopolymer trench drains, NAPL-impacted soil treatment, and reactive core permeable barriers.
- Led design for the closure and reclamation of a former 65-acre refinery water effluent treatment pond at the Chevron Richmond Refinery using in-situ binder stabilization of more than 400,000 cubic yards of dredged sediments and oily sludge.
- Designed solidification/stabilization treatment of approximately 60,000 cubic yards of sediments at a former paper mill facility impacted by dioxin, petroleum hydrocarbons, and metals.
- Designed treatment of lagoon sediments at a former pesticides manufacturing facility, integrating sediment stabilization with static and seismic stabilization of the lagoon embankment.
- Designed remediation of canal sediments impacted by heavy metals along a 4-kilometre section of the Xiangjiang River in Zhuzhou, China.
- Managed and designed decommissioning and remediation of petrol filling stations in the UK and Ireland, including site investigation, remedial option appraisal, pilot testing, soil treatability studies, and remedial implementation.

Remediation Technologies & Applied Research

- Awarded Phase 1 of EU sponsored research grant (Posidon) on application of treatment approach for simultaneous remediation of organic pollutants and heavy metal at waterfront sites.
- Designed and managed the implementation/construction phase of pilot scale project of integrated remediation/redevelopment of fuel retail station using single-step mixing of oxidation reagents and alkaline binders for petroleum-contaminated soils.

- Served as technical advisor and lead designer for solidification/stabilization remediation and closure of three acid tar waste, sludge, and sediment lagoons involving more than 100,000 cubic yards of waste.
- Designed implementation-phase solidification/stabilization of approximately 500,000 cubic yards of oily and tarry sediments contaminated by PAHs, PCBs, and metals at a coal tar pond project in Nova Scotia.
- Developed a QA/QC program for pilot testing and construction of a 5,000-foot-long, 25-foot-deep in-situ mixed soil/cement/bentonite vertical barrier wall in Connecticut.
- Preliminary design of pilot test for electrokinetic removal of mercury from unsaturated soils at a Site of National Interest in Italy.
- Contributed to applied research on soil remediation using degradative soil mixing and solidification/stabilization technologies with Imperial College, the University of Reading.

Advisory Appointments

External Advisor, M.Sc. research project on remediation of soil contaminated with petroleum hydrocarbons using hydrated lime and quicklime, Imperial College of Science, Technology and Medicine, 2006

External Advisor, M.Sc. research project on remediation of petroleum hydrocarbon contaminants in soils using quicklime, Imperial College of Science, Technology and Medicine, 2004

External Advisor, two M.Sc. research projects on remediation of petroleum hydrocarbon contaminants in soils using soil mixing with lime, Imperial College of Science, Technology and Medicine / University of London and Reading University

External Advisor , M.Sc. research project on optimization of jet sled technology to lay submarine oil pipelines, King’s College / European Marine Contractors, London, UK