

MIHAIL E. POPESCU, Ph.D., D.GE, P.E.

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PROFILE

Professional Engineer with diversified, extensive experience in geotechnical engineering teaching, research and consulting, and leadership of international research cooperation programs, groups and schools.



Geotechnical Engineering Teaching

Developed and taught graduate courses on Earthquake Geotechnical Engineering, Landslide Risk Assessment, Slope Stability Analysis and Control, Underground Structures and Geotechnical Engineering in Difficult Ground Conditions at:

- Illinois Institute of Technology, Chicago, USA (2000-Present)
- Northwestern University, Evanston, USA (2012-Present)
- University of Civil Engineering, Bucharest (1980-2000)
- University of Perugia, Italy (1991)
- University of Edinburgh, U.K. (1992)
- University of Tokushima, Japan (1993-1994)
- University of Natal, South Africa (1995)
- Norwegian University of Science and Technology, Trondheim, Norway (1997)

Developed and taught undergraduate courses on Engineering Geology, Soil Mechanics and Foundation Engineering at:

- University of Civil Engineering, Bucharest (1975-2000)
- Illinois Institute of Technology, Chicago, USA (2000-Present)

Director and Lecturer of Short Courses and Educational Workshops: Short Course on Landslide Related Environmental Problems (in conjunction with the International Symposium on Geology and Environment), Istanbul, Turkey, 1997; Black Sea University Summer School on Assessment, Prevention and Remediation of Landslide Related Environmental Geohazards, Mangalia, Romania, 1997; NATO Advanced Workshop on Prevention and Remediation of Landslide Related Hazards in the Black Sea Region, Mangalia, Romania, 1998; Japanese-Romanian Workshop on Landslide Related Geohazards, Sinaia, Romania, 1998.

Invited Speaker at Continuous Education Seminars sponsored by ASCE Illinois and IDOT (2002-present).

Geotechnical Engineering Research

Conducted funded and non-funded research on a variety of geotechnical topics. The research included analytical and experimental studies. Main research interests: slope instability and stabilization, expansive and collapsible soils, soil – structure interaction, computer modeling, and geotechnical hazards compilation and assessment. Leader of UNESCO and NATO international research groups and programs.

Select recent research experience includes:

- Regional scale assessment of geo-hazards with special reference to landslides, expansive clays, and collapsible soils.
- Soil reinforcement by stabilizing piles to control landslides: limit equilibrium and finite element modeling.
- Probabilistic risk assessment and back analysis of mass movements.
- Investigation of slope instability in over-consolidated clays along the Black Sea shore.
- Interpretation of loading tests on piles and plate anchors.
- Stability of deep excavations in open-pit lignite mining.
- Physical-mechanical properties of phosphogypsum in waste dumps.

More than 100 research papers in English, French, Italian and Romanian published in refereed journals and conference proceedings. Topics covered: engineering behavior of soils with metastable structure, including expansive clay, loess and stiff fissured clay, finite element analysis of high embankments and deep excavations, landslide remedial works, design of flexible retaining structures and reinforced earth structures, axial bearing capacity of piles, probabilistic analysis of geotechnical engineering problems, and geotechnical risk analysis using information technology. Some of my research papers have been quoted by other authors in books, journals and conference proceedings.

Keynote Speaker, State-of-the-Art and General Reporter at international and domestic conferences and symposia in the field of Geotechnical Engineering:

- **State-of-the-Art Lecturer** at the 4th International Symposium on Landslides, Toronto, Canada, 1984. Lecture title: **Landslides in overconsolidated clays as encountered in Eastern Europe.**
- **Keynote Speaker** at the International Conference on Slope Stability Engineering, Isle of Wight, U.K., 1991. Lecture title: **Landslide control by means of a row of piles.**
- **Plenary Session Reporter** at the 7th International Conference on Expansive Soils, Dallas, U.S.A., 1992. Report title: **Engineering problems associated with expansive and collapsible soils behavior.**
- **General Co-Reporter** at the International Symposium on Hard Soils and Soft Rocks, Athens, Greece, 1993. Report title: **Slope stability and protection.**
- **Keynote Speaker** at the 1st Tokushima International Seminar on Slope Stability Engineering, Tokushima, Japan, 1993. Lecture title: **UNESCO WP/WLI: Inventory of landslides and inventory of the needs of research on landslides.**
- **Keynote Speaker** at the 2nd Turkish Symposium on Landslides, Adapazari, Turkey, 1995. Lecture title: **Back analysis of slope failures to design stabilizing piles.**
- **Special Lecturer** at the 7th International Symposium on Landslides, Trondheim, Norway, 1996. Lecture title: **From landslide causes to landslide remediation.**
- **Invited Speaker** at the International Conference on Trends in the Development of Geotechnics, Belgrade, Yugoslavia, 1996. Lecture title: **Assessment and management of some ground-related hazards in Romania.**
- **Keynote Speaker** at the International Symposium on Sustainable Development and Geohazards in the Coastal Areas, Yusong, Korea, 1997. Lecture title: **Landslide inventory compilation and assessment in the framework of the United Nations International Decade for Natural Disaster Reduction (1990-2000).**
- **Keynote Speaker** at the International Symposium on Slope Stability Engineering, Matsuyama, Shikoku, Japan, 1999. Lecture title: **The mechanisms, causes and remediation of cliff instability on the western coast of the Black Sea.**

- **Honorary Chairman and Keynote Speaker** at the 3rd International Conference on Landslides, Slope Stability and Safety of Infra-Structures, Singapore, July, 2002. Lecture title: **Landslide Causal Factors and Remediation Options.**
- **Convener of the Session on Engineering Measures for Landslide Disaster Mitigation** at the First World Landslide Forum, Tokyo, November, 2008.
- **Chairperson and Panelist** of Specialty Sessions at different International Conferences, Symposia and Workshops on Geotechnical and Foundation Engineering (1991-present)

Geotechnical Engineering Consulting

Extensive experience in Geotechnical Engineering consulting for design, construction and safety of a wide variety of engineering projects, including harbors, airports, highways, railroads, bridges and mass transit facilities; industrial, commercial and residential structures; and environmental restoration. Expert Geotechnical Engineer with experience in slope instability analysis and control, building on expansive and collapsible soils, high embankments on soft clays, mine deep excavations and waste disposal sites, pile foundations for bridges, diaphragm walls for subways, ground improvement, and *in situ* instrumentation and testing. Responsible for geotechnical support for preparation of design packages, functional design criteria, closure plans and specifications in the United States, Romania, the United Kingdom, Japan, and South Africa. Currently, Professional Consultant for Metropolitan Water Reclamation District of Greater Chicago.

The following presents select project experience under four main technical areas:

- ***Soil Structure Interaction for Spread, Raft and Pile Foundations, Retaining Structures and Pipelines:*** Managed and performed laboratory testing programs, field investigations, numerical deterministic and probabilistic analyses, and provided design evaluations and recommendations for various structures. Example projects: Sheet pile walls for east revetment of Navy Pier, Chicago, Illinois; Settlement and bearing capacity assessment of earthen embankments for the Skyway reconstruction, Chicago, Illinois; Cast-in-situ diaphragm retaining walls for Chicago Metra-Union Pacific Railroad reconstruction; Pile and micropile foundations design and testing for I-88, Tristate Tollway and Dan Rayan Expressway bridges reconstruction; Bridge foundations on drilled shafts for DART Blue Line extension project in Dallas, Texas; Soil nailing of the temporary excavations for the Barrie Park Remediation Project, Chicago; Illinois; Anchored base plates for the temporary fabric structure at Barrie Park Remediation Project, Chicago; Illinois; Geotechnical design of the compensated foundation of the Wind Turbine Generator at Field Museum, Chicago, Illinois; Cofferdams for Blue Chip Casino basin reconfiguration, Michigan City, Indiana; Field assessment of bearing capacity for 236 large diameter belled caissons at Elevated Parking Structure, Chicago Midway Airport; Establishing the cause of shallow pipe for the Alliance Pipeline Project, North Dakota; Horizontal directional drilled pipe for the water main system for the City of West Chicago, Illinois; Finite element analysis of ground movements induced by pipe jacking for storm sewer installation at the reconstruction of U.S. Route 20 in East Dubuque, Illinois; Back analysis of refuse test pads at Monterey Coal Mine No. 2, Albers, Illinois; Controlled segmented excavation of the contaminated soil near aboveground storage tanks and containment structures at Kopper Chemical Refining Plant, Stickney, Illinois; Anchored shafts to stabilize landslides in Shikoku, Japan; Diaphragm walls for the subway structures in Bucharest, Romania; Distress investigation and remediation of pavements on expansive soils in Durban, South Africa.

- ***In Situ Improvement of Problematic Soils:*** From feasibility stage through construction, performed evaluation of different ground improvement options, laboratory testing, computer modeling and design, pilot tests, and monitoring for dynamic compaction, stone columns and wick drains improvement of loose and soft soils, and lime stabilization of expansive clays. Example projects: Design and monitoring of weak soils improvement with stone columns for the approach embankment and abutment of EB I-80/94 Bridge over Thorn Creek, Illinois; Design and CPT verification of the dynamic compaction of the existing uncontrolled landfill to support a new railroad high embankment at Gary/Chicago International Airport, Indiana; Design and monitoring of soft clays consolidation with wick drains for the abutment of the Bridge over Danube River at Cernavoda, Romania; Laboratory and field testing of lime stabilization of expansive soils for Highways in Durban, South Africa and runways of the International Airport of Bucharest, Romania.
- ***Slope Instability Remediation and Control:*** Slope instability instrumentation and monitoring; evaluation and comparison of different remedial options, and final design of selected remedial measures, including slope geometry modification, drainage and restraining works. Example projects: Slope stabilization for the extended embankment of I-55 at Wilmington Road and for the reconstruction of the bridge carrying Cicero Avenue over Chicago River, Chicago, Illinois; Biotechnical slope stabilization of lake shores for Vulcan Lakes Recreational Project; Remediation of the mountain slope failures in Shikoku, Japan and unstable slopes on the highway network in Romania.
- ***Slope Stability and Groundwater Modeling:*** Performed geologic reconnaissance, laboratory and *in situ* measurement of soil and rock mechanical and hydraulic properties, landslide hazard mapping, seepage and slope stability modeling using finite element method, finite difference method, and limit equilibrium methods. Example projects: Reservoir slope failure in Itasca, Illinois; Deep excavations of Elgin Dolomite Quarry, Bluff City, Illinois; High embankments on low bearing capacity soils, Interstate 80/94, Illinois; Groundwater modeling for Indiana Harbor and Canal Confined Disposal Facility, East Chicago, Indiana; Cut-off slurry trench walls for ground water control at Monterey Coal Mine No. 2, Albers, Illinois; Deep excavations of the Danube-Black Sea navigable canal in Romania; Coastal landslides management in the U.K.

Professional Registrations

- Professional Engineer: Indiana, 2006 (PE10607329); Iowa, 2005 (17372); Kentucky, 2006 (12796); Michigan, 2006 (6201053250); Ohio, 2006 (70967); Wisconsin, 2009 (40373-006).
- ASCE Diplomate in Geotechnical Engineering (D.GE), 2010 (1134)
- European Engineer (Eur.Ing): 2000 (27024)

Professional Societies and Committees

Served as Chairman of the Working Group on Landslide Causes of the Geotechnical Societies' UNESCO Working Party on World Landslide Inventory (1990-2000) and Co-Chairman of the Commission on Landslide Remediation of the International Union of Geological Sciences Working Group on Landslides (1994-2000).

Currently:

Core Member:

- ASCE Committee on Risk and Vulnerability
- ISSMGE-IAEG-ISRM Joint Technical Committee on Landslides
- ISSMGE Technical Committee 40 on Forensic Geotechnical Engineering

Member:

- American Society of Civil Engineers (ASCE)—GEO Institute
- International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE)
- International Association of Engineering Geology and Environment (IAEG)
- International Society of Rock Mechanics (ISRM)
- Association of Engineering Firms Practicing in the Geosciences (ASFE)
- Institution of Highways and Transportation, London, U.K.
- Comité Français de la Mécanique des Sols et des Travaux de Fondation
- Associazione Geotecnica Italiana