

Joseph A. Eduardo, PE

Forensic Engineering Expertise

Forensic Engineering Experience

Mr. Eduardo's experience includes serving as the forensic geotechnical engineer in responsible charge during the performance and supervision of hundreds of subsidence evaluations throughout the state of Florida and elsewhere in the United States. Specific tasks associated with subsidence evaluations have included development of strategies and specifications to restore the foundation subgrade support below numerous structures located above confirmed sinkholes and other problematic subsurface conditions, serving as the engineer in responsible charge, and oversight of subsurface remediation operations, including the installation of supplemental support systems. Mr. Eduardo's experience also includes development of methods and strategies to treat problematic subsurface conditions that were discovered in sinkhole claim forensic studies. His experience has also included direction of emergency responses to mitigate the effects of active sinkhole events that have threatened structures.

Retained Expert Experience

Mr. Eduardo has provided expert witness testimony, both in deposition and at trial, related to building subsidence issues and landform instability. Mr. Eduardo has provided professional engineering consultation services and advice as part of litigation support services. In addition, Mr. Eduardo has performed peer reviews of studies performed by other consultants.

Subsidence Cause and Origin

Determine the source and cause of notable subsidence of buildings and other structures. Examples of past work include determination of the presence of weak building subgrade conditions and whether the weak conditions were attributable to underlying geologic hazards and/or to the presence of problematic soil deposits. Examples of past work include sinkhole subsidence studies, subsidence and/or heaving of structures subjected to the effects of swelling soil deposits, subsidence that develops as the result of subsurface mining, and subsidence that develops as the result of collapsible soil deposits.

Landslide Cause and Origin

Landslides occur when the weight of an unstable earth and/or rock mass overcomes the frictional forces that keep it from sliding to a lower position. Such events occur, for instance, when the weight of the unstable mass (and therefore the downward force) is increased by water saturation from heavy storms, or when the frictional resistance that prevents the unstable mass from sliding along a slip surface is reduced by excavation or by a change in the effective frictional resistance on that surface. Studies to determine cause and origin of landslide events include such responsibilities as review of previous geotechnical engineering design reports, review of published geologic maps and data, visual assessment of the landslide to determine the probable mode of failure that has occurred, and when necessary, subsurface exploration to determine the nature of elements of the sliding mass and the slip surface.

Earthwork Material and Construction Defects

Buildings, pavements, and other structures can sustain damage related to differential movement that is caused by the collateral effects of defects in earthwork materials used and/or in the installation of the earthwork materials. Forensic evaluations to

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determine the cause and origin of the earthworks generally include review of the design-basis geotechnical reports, review of construction plans and specifications, review of materials testing reports and inspections, performance of subsurface exploration and testing at selected locations, evaluation of the collected data to determine whether the cause of failure is attributable to deficient design recommendations, to deficient material quality or installation, or to issues that are unrelated to earthwork issues.

Subsurface Hazard Remediation and Mitigation

Structures that suffer damage from differential movement that are attributed to the effects of subsidence or other earth movement, which was caused by the collateral effects of problematic subsurface conditions, must be supported on a competent foundation subgrade, before structural repair is initiated, in order to continue or restore the structure's original function/use. When requested or required, subsurface remediation procedures are developed to repair problematic soil conditions that were created by the discovered earth movement. Examples of past work include developing procedures for the injection of low-mobility grout to prevent migration of foundation subgrade soils into sinkhole void zones, developing procedures for the injection of chemical grout to strengthen soil zones that have been weakened and are subject to stress from the structure loads, recommendations for the design and installation of underpin piles to transfer support of structures below problematic soil conditions onto a competent load-bearing stratum, and preparation of recommendations to remediate landslides.

Earthwork Engineering

Site grading, earth balance, soil stabilization, road design, drainage, hydrology, sanitary sewer, water main and storm sewer systems, on-site sewage disposal systems and wells, and pumping stations.

Qualifications & Training

- Statutorily Compliant Soil Displacement Investigations, FBPE Course No. 0008632, March 2013
- Underpinning and Strengthening of Foundations, (AWI010111) ASCE Florida Course No. 0000435, 2014
- Hillslope Hydrology and Stability, (AWI040813) ASCE Florida Course No. 0000433, November 2014
- Use and Interpretation of the Seismic CPT (sCPT), Gregg Drilling, September 2014
- Soil and Rock Slope Stability, (61802015) ASCE Florida Course No. 0000447, September 2015
- Introduction to Geotechnical Grouting, (7027W2016) ASCE Florida Course No. 0000434, November 2015
- Geosynthetic Reinforced Mechanically Stabilized Earth Walls, (7314W2016) ASCE Florida Course No. 0000434, September 2016
- Ground Modification Seminar, PDH Online, February 2017
- The Use of Non-Destructive Geophysical Technologies to Evaluate Concrete and Concrete Foundation Structures & Assess Sinkhole Conditions, ASCE Florida, February 2017
- The Design of MSE Walls With Low Density Cellular Concrete, Aerix Industries, March 2018
- Controlled Modulus Columns for Ground Improvement, ASCE Florida Section, August 2019
- Practical Approach to Grouting with Low-Density Cellular Concrete, Aerix Industries, August 2019

- Approaches to Grouting in Karst, (AWI012816) ASCE Florida Course No. 0000435, December 2020
- Geogrid Applications, Tensar International Corporation, May 2022
- Application of the CPT to Evaluate Soil Liquefaction, Keller, July 2023

Education

Master of Science in Geotechnical Engineering
The Ohio State University, Columbus, OH
1979

Bachelor of Science in Civil Engineering
The Ohio State University, Columbus, OH
1976

Educational Presentations

Presentation of Technical Paper – June 13-17, 1999:
Hussin, J.D., Eduardo, J.A. and Elliott, D.A. (1999). "Eagle Ridge Mall – Haines City, Florida" *Proceedings of the Third National Conference – Geo-Engineering for Underground Facilities*, Geotechnical Special Publication No. 90, pp.671 - 683

Licenses & Certifications

PE - Professional Engineer
Licensed by the State of California - Number 87436
Licensed by the State of Florida - Number 33318
Licensed by the State of Louisiana - Number 35649
Licensed by the State of Ohio - Number 46259
Licensed by the State of Pennsylvania - Number 84931
Licensed by the State of Tennessee - Number 113080
Neutral Evaluator, State of Florida

Employment History

Forensic Engineer
Nederveld, Inc.
2024 - Present
Investigation of claims to determine the root cause of failure of foundations and earthworks of insured structures and facilities. Duties include forensic engineering analysis relating to foundation pathology, structural damage due to subsidence or subgrade instability, determination of the cause and origin of landslide events, and determinations of the cause and origin of earth embankment instability and failure.

Senior Geotechnical Engineer
KSM Engineering and Testing, Sebastian, FL
2021 - 2022
Duties included peer review of design-basis geotechnical explorations, mentoring of junior engineering staff, and serving as the engineer-of-record on selected geotechnical engineering design studies.

CQC-Geotechnical Engineer-Fuel Storage Tank Replacement Project
US Army Garrison-Kwajalein Island, Kwajalein Atoll, Republic of the Marshall Islands
2018 - 2019
Mr. Eduardo was the Geotechnical QC professional overseeing and documenting the installation of the deep soil mixing operations to improve the proposed new fuel tank farm installation at the US Army Garrison-Kwajalein Island, Kwajalein Atoll, Republic of the Marshall Islands.

Senior Geotechnical Engineer
Envista Forensics, LLC, Tampa, FL
2012 - 2017

Duties included supervision and performance of forensic geotechnical studies to determine cause and origin of subsidence and other earth movement claims on behalf of property insurance companies. Development of strategies, procedures, and specifications to remediate verified sinkhole subsidence claims. Mentoring of junior engineering and other professional staff.

Senior Geotechnical Engineer
HSA Engineers and Scientists, Tampa, FL
2006 - 2012

Duties included supervision and performance of forensic geotechnical studies to determine cause and origin of subsidence and other earth movement claims on behalf of property insurance companies. Development of strategies, procedures, and specifications to remediate verified sinkhole subsidence claims. Mentoring of junior engineering and other professional staff.

Senior Project Engineer
Ardaman & Associates, Inc., Bartow, FL
1987 - 2006

Duties included geotechnical exploration proposal preparation, review and approval of construction materials, QC testing reports, geotechnical exploration report preparation and engineer of record, performance of forensic geotechnical engineering assignments largely concerning sinkhole subsidence claims. Mentoring and instruction of technical (non-engineering) staff.

District Engineer
Pittsburgh Testing Laboratories, Inc., Tampa, FL
1983 - 1987

Duties included geotechnical exploration proposal preparation, review and approval of construction materials QC testing reports, geotechnical exploration report preparation and engineer of record, performance of forensic geotechnical engineering assignments largely concerning sinkhole subsidence claims. Mentoring of junior engineering and technical (non-engineering) staff.

Assistant Project Engineer
D'Appolonia Consulting Engineers, Pittsburgh, PA
1981 - 1982

Duties included logging of subsurface explorations, performance of laboratory testing, background geotechnical research, geotechnical engineering calculations and analyses, preparation of draft engineering reports.

Geotechnical Engineer
Sargent & Lundy Engineers, Chicago, IL
1977 - 1980

Duties included geotechnical engineering calculations and analyses related to foundations and earthworks installed at power generations stations. Structures and facilities included cooling pond embankments, turbine foundations, boiler foundations, and cooling tower foundations.

Professional Affiliations

Life Member: American Society of Civil Engineers (ASCE)

Publications

Hussin, J.D., Eduardo, J.A. and Elliott, D.A. (1999). "Eagle Ridge Mall – Haines City, Florida" *Proceedings of the Third National Conference – Geo-Engineering for Underground Facilities*, Geotechnical Special Publication No. 90, pp. 671 – 683.

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