

### Years of Experience

17

### Areas of Specialized Knowledge

Soil improvement  
Liquefaction mitigation  
Soil-structure interaction  
Soil heave and settlement  
Pipelines  
Backfill  
Wind turbines  
LNG tanks  
Slope stability  
Construction Vibrations  
Support of Excavation  
Deep & Shallow Foundations  
Retaining Walls  
Levees / Dams  
Earthquake Engineering

### Education

PhD/Civil & Environmental Engineering/  
MIT / 2012  
MS/Civil & Environmental Engineering/  
MIT / 2009  
BS and MEng/Civil Engineering/  
National Technical University of Athens  
/ 2005

### Professional Registrations and Certifications

Registered Professional Engineer in: MA,  
NY, NJ, VA, CA, DC and in Greece

### Select Honors and Awards

National Academy of Engineering  
Frontiers of Engineering Symposium,  
2019  
Lecturer at MIT, 2013 and 2017  
MIT Schoettler Graduate Fellowship  
Honorable mention award in the  
Northeastern Geotechnical Graduate  
Research Symposium Abstract  
Competition, 2016

### Employment History

Geocomp Corporation -2021 to present  
Exponent - 2011 to 2021

### Professional Affiliations

Geo-Institute Deep Foundations and  
Geo-Institute Computational  
Geotechnics Committee Member,  
American Wind Energy Association,  
Guide Development Committee  
Society of Construction Law, Regional  
Director  
American Society of Civil Engineers  
Boston Society of Civil Engineers

Dr. Vytiniotis has background in structural and geotechnical engineering, geotechnical earthquake engineering, and numerical analysis. He has worked on numerous projects in more than 20 states and multiple countries, assisting project owners, law firms, utility companies, insurance companies and developers. His analyses consist of assessing soil improvement, soil-structure interaction, effects of vibrations and vibration isolation, construction defects, premises code compliance, dam safety, landslides, LNG and diesel tank condition assessments, API tank inspections, assessing wind turbine failures, causation of MSE wall failures, effects of adjacent construction, soil heave or settlements, frost-induced effects on soils, pipeline installation, effects of soil movements on pipelines, water intrusion, flooding, scour and backfill quality. He is experienced in evaluating slope stability, performing mechanical and flow-through-porous media finite element analyses and soil-structure interaction using various software such as Plaxis, Flac, Geostudio, ABAQUS, LPILE, FEFLOW, HydroCAD, and GROUP. Additionally, Dr. Vytiniotis has experience in data analysis, signal processing and GIS with software such as QGIS and R.

Dr. Vytiniotis has performed research on the seismic response of pile-supported wharves, seismic slope stability, the effectiveness of prefabricated vertical drains (earthquake drains) and soil densification in reducing liquefaction risk, the effect of gravel drains in amplifying seismic accelerations, and numerical simulations of centrifuge experiments. He also has research experience in constitutive soil modeling and evaluating settlements in soft soils associated with staged levee construction. He has experience in using probabilities to understand seismic risk of geotechnical components. Dr. Vytiniotis is a regional director of the Society of Construction Law North America. He is also a member of Geo-Institute's Deep Foundation and Computational Geotechnics committees. He is member of the American Wind Energy Association (AWEA) committees developing the structural and geotechnical standards for the soil-structure interaction of wind turbine foundations. In the past Dr. Vytiniotis gained international experience in Greece and Switzerland, and was appointed lecturer at MIT. He has been serving as a judge for the MIT Enterprise Forum Greece Startup Competition since 2015.

Dr. Vytiniotis' doctoral research, part of a multi-university and multi-disciplinary research project, focused on performing site response analyses aimed at assisting port authorities in managing their seismic risk. He collaborated with other research groups with specialty in soil-structure interaction and port operations, in order to evaluate the effect of earthquake-induced soil deformations on failure of individual structural components by means of fragility curves and disruption of port operations. During his doctoral studies at MIT, Dr. Vytiniotis was a teaching assistant for a graduate-level course in advanced soil mechanics as well as a guest lecturer for a graduate-level course in soil dynamics.

## **Key Project Experience**

### **Causation of movement of reinforced earth wall structures, multiple locations**

Investigated the causative factors of movement and failure of many reinforced earth walls and slopes in multiple states.

### **Effects of construction to adjacent buildings, multiple locations**

Evaluated the effects of construction vibrations, dewatering and excavation to adjacent buildings.

### **LNG tank condition assessments, multiple locations**

Worked on multiple LNG tanks to evaluate their condition and assess effects of flooding, groundwater, water intrusion, corrosion, spalling concrete and soil movement on the integrity of the tank.

### **Landslide causation and mitigation, multiple locations**

Worked on multiple projects to evaluate the causative factors that lead to damaging landslides in multiple states.

### **Pipeline damage causation and risk assessment, multiple locations**

Worked in multiple projects to evaluate the effects of soil, water and other loads in the integrity of pipes. Developed a score-based model to evaluate the risks associated with pipelines crossing faults. Evaluated with advanced finite element analysis the effects of traffic in loading of buried pipelines.

### **Sinkhole causation and mitigation, multiple locations**

Worked both in US and internationally to evaluate the causative factors of sinkholes and recommend conceptual mitigation measures.

### **Power plants foundations, multiple locations**

Reviewed and designed foundations, soil improvement and temporary offshore foundation of various components of powerplants, including tanks and mechanical equipment.

### **Wind Turbine, multiple locations**

Reviewed the soil-structure interaction of monopile foundations to determine causation of wind turbine tilting. Reviewed various conditions on access roads to determine compliance with specifications and causative factors which affected mobility of turbine part vehicles.

### **Stormwater effects, multiple locations**

Evaluated precipitation records, and estimated stormwater volume and its effects in flooding, moisture intrusion and scour.

### **Publications:**

Vytiniotis, A, Seeger, SM, Johnson RT, Bad Vibrations, CLM Construction Claims Magazine, 2021

Marr, WA, Vytiniotis, A, Remote Vibration and Noise Monitoring for Construction, Pile Drivers Magazine, 2021

Vytiniotis, A, Brier, SD, Criscuolo, MB, Leveraging GIS-Based Technology for Adjacent Construction Claims, August 03, 2020,

Under Construction - Summer 2020, American Bar Association Vytiniotis, A, Sykora, D, Casey, B. The Effects of Poor Design and Construction Workmanship on a Mechanically Stabilized Earth (MSE) Segmental Retaining Wall (SRW) in North Carolina, Geocongress, 2020.

McLean, S, Vytiniotis, A, Sykora, D. Laboratory testing and engineering analysis of an underground stormwater detention system, Geocongress, 2020.

- Vytiniotis, A, Colella, F, Kytomaa, H, Budinski, N, Lessons Learned – Investigating failures of LNG containment systems, Gastech, Houston, 2019.
- Vytiniotis, A, Panagiotidou, Al., Whittle, AJ. Analysis of seismic damage mitigation for a pile-supported wharf structure, Soil Dynamics and Earthquake Engineering, Volume 119, 2019, Pages 21-35, ISSN 0267-7261, <https://doi.org/10.1016/j.soildyn.2018.12.020>.
- Vytiniotis, A, DeVore, C, Hunt, J, Luth, G, Osteraas, J. Design of Machine Isolation System for Vibration Mitigation at Nearby Sensitive Receiver, EMI, MIT, 2018.
- Vytiniotis, A. Efficient management of adjacent construction claims from numerous properties, Michigan Defense Trial Counsel E-Newsletter, 2018.
- Vytiniotis A, Casey B, Sykora WD. Lateral soil movements due to pile driving: a case study in soft clays, IFCEE, Orlando, FL, 2018.
- Vytiniotis A, Whittle AJ. Analysis of PV drains for mitigation of seismically-induced ground deformations in sand slopes, Journal of Geotechnical and Geoenvironmental Engineering, 10.1061/(ASCE)GT.1943-5606.0001722.
- Panagiotidou Al., Vytiniotis A., Whittle AJ. Prediction of seismic response and damage mitigation for pile-supported wharf structures. 15th PCSMGE / 8th SCRUM / 6th IS-BA 2015 Buenos Aires, 2015.
- Sama M, Sykora WD, Vytiniotis A. Vertical pressures produced by controlled low strength material (CLSM) poured into pipe trenches. International Foundation Congress and Equipment Expo 2015, San Antonio, TX, 2015.
- Vytiniotis A, Whittle AJ. Effectiveness of PV drains for mitigating earthquake-induced deformations in sandy slopes. Geocongress 2013, San Diego, CA, 2013.
- Vytiniotis A. Contributions to the analysis and mitigation of liquefaction in loose sand slopes. Ph.D. Antonios Vytiniotis, Ph.D., P.E. Thesis, MIT, Cambridge, 2012.
- Vytiniotis A, Whittle AJ, Kausel E. Effects of seismic motion characteristics on cyclic mobility and liquefaction. 5th International Conference on Earthquake Geotechnical Engineering, Santiago, Chile, 2011.
- Vytiniotis A, Whittle AJ. Effect of non-uniform gravitational field on seismically-induced ground movements in centrifuge models. 2009 NSF Engineering Research and Innovation Conference, Honolulu, HI, 2009.
- Vytiniotis A, Whittle AJ, Kausel, E. Numerical simulation of centrifuge testing. NEES 6th Annual Meeting, Portland, OR, 2008.
- Papadimitriou AG, Vytiniotis A, Bouckovalas GD. Equivalence between 2D and 3D numerical analyses of the seismic response of improved sites. Proceedings, 8th U.S. National Conference on Earthquake Engineering, San Francisco, CA, April 18-22, 2006.

### Presentations:

- Vytiniotis, A., Focus on Slope Stability Analysis, Halfmoon, September, 2021.
- Vytiniotis, A., Soil Mechanics, Bearing Capacity and Slope Stabilization in New England, Halfmoon, October, 2021.
- Vytiniotis, A., Soil Liquefaction: Risk Evaluation, Special Soils and Risk Mitigation using Earthquake Drains and other Drainage Techniques, ASCE, November, 2021.
- Vytiniotis, A., Construction Vibrations, ASCE, October, 2021.
- Vytiniotis, A., Slope Stability and Inclinator Monitoring Workshop, DeepEX, December, 2021.
- Vytiniotis, A., Slope Stabilization and Landslide Prevention, Halfmoon Education, March 2021.
- Vytiniotis, A., Deep dive into geostructural failures, Halfmoon Education, February 2021.
- Vytiniotis, A., How to perform a slope stability analysis, Halfmoon Education, August 2020.
- Vytiniotis, A., Slope mechanics and movement, Deep Excavation Online Seminar, July 2020.
- Vytiniotis, A, Colella, Bak, W., F, Kytomaa, N, Integrity and Asset Management of LNG Tanks – Lessons Learned from Failures, Gastech, 2020.
- Vytiniotis, A, Soil Liquefaction Risk Mitigation using Earthquake Drains and other Drainage Techniques, Continuing education for licensed professional engineers, ASCE, 2020.
- Vytiniotis, A, Construction Vibrations, American Society of Civil Engineers, Continuing education for licensed professional engineers, ASCE, 2020.
- Vytiniotis, A, Computational Tools and Latest Advances for Three Prominent Pile-soil Interaction Problems, Geo-institute Computational Geotechnics Committee Sponsored Lecture, 2019 and 2020.
- Vytiniotis, A, Marinucci, A. Soil Liquefaction Risk Mitigation using Earthquake Drains and other Drainage Techniques, Continuing education for licensed professional engineers, ASCE, 2019.
- Vytiniotis, A, Casey, B. Construction Vibrations, American Society of Civil Engineers, Continuing education for licensed professional engineers, ASCE, 2019.
- Lauren, DJ, Vytiniotis, A. Ground failures and other groundwater-related property damage. Lorman Education Services, continuing education for licensed professional engineers, 2018.



*Technologies to manage risk  
for infrastructure*

# Antonios Vytiniotis, Ph.D., P.E.

Director, Group Lead – MA Consulting

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Vytiniotis, A, MacLean, SB. Buried plastic reservoirs and tanks - out of sight; but are they out of mind? American Society of Civil Engineers, Continuing education for licensed professional engineers, 2018.

Vytiniotis A. Vulnerability of ports and harbors to east coast earthquakes. EERI Annual Meeting 2015, Boston, MA, 2015.

Vytiniotis A. Seismic risk mitigation for port systems. NEES Graduate Student Internship, San Diego, CA, 2009.