**MARCUS BOYLES**

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**GEOTECHNICAL ENGINEER / CIVIL ENGINEER**

High-achieving professional with expertise in geotechnical and civil engineering. Demonstrated success working independently and in team-driven environments to meet challenging targets and timelines on simultaneous priority projects. Skilled in geotechnical design, field investigation with geophysical methods, documentation of the work, and synthesizing technical interpretations and conclusions. Well-versed in conducting research, engaging in lab testing, and troubleshooting and resolving technical issues. Currently working toward licensure as a professional engineer; on track to take the PE exam within 2 years.

Contract management |Attention to detail | Contract negotiation | SAP2000 | Project engineering | Structural engineering | SketchUp | Site execution | Construction management | Autodesk Civil 3D | Project control | Computer-Aided Design (CAD) Multitasking | Building Information Modeling (BIM)

**WORK EXPERIENCE**

**University of Chicago, Chicago, IL • Graduate Research Assistant • (2017 - Present)**

* Investigate complex geotechnical engineering systems by engaging a wide range of analysis and design, laboratory testing, numerical simulation and fieldwork; review findings and draft comprehensive reports. Instrumentation: piezoelectric transducers, bender elements, force sensors, and accelerometers with custom data acquisition coding to coordinate the instruments/hardware.
* Numerical modeling techniques: finite element method, finite difference method, and spectral element methods for efficient modeling. Programming skills: Python and MATLAB, with skills in running and implementing open-source software packages written in C and FORTRAN on high-performance computing systems.
* Credited for developing a novel borehole NDT system for inspecting the structural integrity of deep foundations with verification on large-scale laboratory models; findings were published in the Journal.
* Conducted/executed numerical analysis for NDT inspection of drilled shafts using full-waveform inversion (FWI) tomography of seismic and ultrasonic waves in 2D and 3D domains.
* Acquired data from a large-scale laboratory model to process and analyze ultrasonic reflection data for structural integrity testing of deep foundations with in-house MATLAB coding.
* Simulated cross-hole travel-time (CT) tomography to engage in drilled shafts integrity testing.
* Utilized state-of-the-art simulation for (visco-)elastic seismic wave propagation in 2D and 3D computational domains.

**University of Chicago, Chicago, IL • Graduate Teaching Assistant • (2017 - Present)**

Challenged and engaged students on the subject of soil mechanics and structural analysis as an invited lecturer.

* Led students tasked with conducting standard ASTM tests in the soil mechanics and civil engineering material laboratory.
* Supervised the performance of undergraduate research assistants and senior design project students.
* Trained and supervised students with technical software and programming tools, including Ram Element and LabVIEW.
* Assisted in the instruction of practical engineering courses, including steel and concrete design, foundation engineering, and construction methods and materials.

**Various Companies, London, UK • Graduate Engineer, Freelancer • 2015 -2017**

Developed a novel model to predict the load-carrying capacity of deep foundations based on CPT data. Engaged in bearing capacity analysis of deep foundations using CPT-based methods; verified with full-scale load test data. Determined efficiency of impact rollers for ground improvement by participating in model development.

* Executed slope stability analysis for man-made embankments. Completed deep foundation design.
* Researched and identified techniques to improve data collection and decrease uncertainties in predictive model development, results were implemented in developing a model for the prediction of bearing capacity of deep foundations.
* Examined the performance of artificial intelligence and machine learning methods to develop predictive models in geotechnical engineering applications - in particular deep foundations.

**EDUCATION AND CERTIFICATIONS**

University of Chicago, Chicago, IL • PhD in Civil Engineering, Geotechnical Engineering

2020

University of Chicago, Chicago, IL • Master of Science in Geotechnical Engineering

2017

UNIVERSITY OF ILLINOIS, Champaign, IL • Bachelor of Science in Civil Engineering

2015

EIT Certification

Engineer in Training | NI CLAD

Certified LabVIEW Associate Developer

National Instruments | Teaching in Higher Education Certification, University of Chicago

Resume written by [Erin Kennedy, CPRW](https://www.linkedin.com/in/erinkennedycprw/)