

# Islam Mamdouh Ezzeldin Abdelhady

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A passionate geotechnical engineer eager to discover new chapters and gain experience worldwide with design and field work experience.

## EDUCATION

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### **PhD Degree, Civil and Resource Engineering Department, Dalhousie University** **2020-2023**

Scope of research includes investigating the performance of buried corrugated metal culverts and pipes, investigating the deterioration impact due to corrosion or mechanical abrasion on the structural capacity, and employing proposed rehabilitation techniques to overcome the corrosion effects.

### **MSc Degree in Geotechnical Engineering - Faculty of Engineering, Cairo University** **2017-2019**

Scope of research includes analyzing the performance of soil steel composite bridges while considering analytical and numerical simulations. The analysis also investigated the use of geogrid layers as an improvement methodology to enhance the system capacity.

### **BSc in Civil Engineering - Civil Engineering Department, Cairo University** **2011-2016**

Graduation Project: Foundations & Side Support System for an Electrical Power Plant (GPA: 4.0)

## WORK EXPERIENCE

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### **Geotechnical Designer, BME Engineering Ltd., NS, Canada** **2023-2024**

- Designed earth shoring system (e.g., soil nails and rock anchors with shotcrete and soldier piles with timber lagging).
- Designed under-slab drainage systems for underground water dewatering.
- Designed retaining walls (e.g., block and gravity walls).
- Supervised field work regarding performing boreholes and test pits and preparing factual geotechnical reports.
- Investigated different sites for footing inspection, retaining walls, and mass excavation and compaction.

### **Teaching assistant, Civil Eng. Department, Dalhousie University** **2020-2023**

- Assisted 3<sup>rd</sup> undergraduate students one-on-one and in groups during tutorials and office hours for the Foundation Engineering course.

### **Teaching and Research /Laboratory assistant, Civil Eng. Department, Cairo University** **2017-2020**

- Assisted 3<sup>rd</sup> and 4<sup>th</sup> undergraduate students one-on-one and in groups during tutorials and office hours for the Soil Mechanics and Foundations courses.
- Supervised field work for various projects including new residential projects and performed stability assessments for historical buildings over archaeological sites. Investigations included boreholes supplemented with SPT and plate load tests, as well as test pits.
- Performed various lab tests including sieve analysis, hydrometer, direct shear, unconfined tests, and triaxial tests. Prepared laboratory reports documenting test results as well as design recommendations.
- Contributed to the structural assessments of multiple historical buildings (~300 years old) to evaluate the stability of the eroding foundation. Investigations primarily included geotechnical investigations and visual assessments of the buildings to undertake simplified analyses based on observed conditions.
- Participated in research involving the design of isolated footings constructed over geogrid-reinforced soil tied to deadmen ends. The research goal was to investigate improved footing performance and limit surface settlement.

- Designed MSE walls for luxury residential development projects using MSEW and PLAXIS 2D. Evaluated external stability (bearing, overturning, and sliding) and internal stability (pullout, tension failure, connection to fascia) of the walls. Prepared both design reports summarizing results of analyses and drawings for construction.
- Performed FE models using PLAXIS 2D for the design of multiple plantations for sewer pipeline systems and a concrete box tunnel within a congested city center. Reviewed available geotechnical data to define appropriate soil models and design parameters. Analyses included stability assessments and calculation of stresses within the structures.
- Completed global stability analysis for deteriorating existing slopes near residential properties.

## ADDITIONAL WORK EXPERIENCE

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- Library assistant at Dalhousie libraries (2021-2023).
- Lead invigilator at MAH Accessibility Exam Centre at Dalhousie University with students with different disabilities (2021-2023).

## COMPUTER PROGRAMS

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|-------------------------|---------------------------------------|
| • PLAXIS 2D and 3D      | • GGU (general use)                   |
| • WALLAP                | • Slide (general use)                 |
| • AutoCAD               | • SAP Analysis Software (general use) |
| • MS Office             |                                       |
| • ALLPILE (general use) |                                       |

## SKILLS SNAPSHOT

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| • Strong leadership skills: Adaptability and flexibility, self-starter, excellent collaboration, team player   | • Wide-ranging technical skills: different geotechnical software, strong coordination between different workers, and practical field experience. |
| • Presentation skills: Friendly, caring, and welcoming, highly engaging  | • Experience in research: clear and concise writing and presentation skills  |
| • Excellent communication skills: active listening, working with different people, individualized instruction. |  |

## PUBLICATIONS

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- Ezzeldin I. M, El Naggar H. Three-dimensional finite element modeling of corrugated metal pipes. Transportation Geotechnics; 2021a.
- Ezzeldin I. M, El Naggar H. Earth pressure distribution around flexible arch pipes, Engineering Structures, Volume 237, 112226, ISSN 0141-0296; 2021b.
- Ezzeldin I. M, El Naggar H. Numerical Modelling of Induced Stresses in Buried Corrugated Metal Structures due to Compaction Efforts, Transportation Geotechnics; 2022.
- Ezzeldin I. M, El Naggar H, Newhook J, Jarjoura G. Accelerated wet/dry corrosion test for buried corrugated mild steel, Case Studies in Construction Materials; 2022.
- Ezzeldin I. M, El Naggar H. 3D Numerical Modeling of Metal Pipe in Enköping Case Study, Geo-Calgary; 2020.

- Ezzeldin I. M, El Naggar H, Newhook J. Numerical Modelling of a Corrugated Metal Box Culvert, Geo-Niagara; 2021.
- Ezzeldin I. M, El Naggar H, Newhook J. 3D numerical modelling of earth pressures on a nonyielding rigid wall due to compaction efforts, Geo-Calgary; 2022.
- Ezzeldin I. M, El Naggar H, Newhook J. Numerical modelling of enhancement of the capacity of buried metal culverts by using geogrids, Geo-Africa; 2022.