PHD OPPORTUNITY IN GEOTECHNICAL ENGINEERING
“The effect of surcharging on secondary settlement in peat”

Background
Intact peatland ecosystems serve several important functions, one of which is carbon sequestration. However, excavate-and-replace is currently the preferred method of handling peat encountered on road schemes in Ireland, engendering CO₂ release with negative environmental implications. Surcharging, a ground improvement process that enables compressible soils to remain in place, is largely unproven in peat where secondary settlement can be very significant, and the technique is not currently permitted by Transport Infrastructure Ireland in highly organic soils. The objective of this research is to appraise the technical viability of surcharging as a method of secondary settlement reduction in peat. Specifically, the research will aim to capture the effect of surcharge magnitude and duration on the extent of longterm settlement reduction (i) at laboratory scale (extended-duration oedometer tests), (ii) in the field (surcharge trials facilitated by industrial partners) and (iii) numerical modelling, using a soil model appropriate to peat. By addressing technical knowledge gaps, this 4 year PhD project has the potential to lead to an improvement in the environmental credentials of road schemes in peatlands, with international application.

The project will be funded by Science Foundation Ireland through the Irish Centre for Research in Applied Geosciences (iCRAG) https://www.icrag-centre.org/, and an industry consortium including Transport Infrastructure Ireland https://www.tii.ie/, a civil engineering contractor and three civil engineering consultancies.

Requirements
Applicants should have a 1st class or 2.1 Bachelor’s degree (Level 8) in Civil Engineering, and ideally a Master’s degree (Level 9) in Civil Engineering or a cognate subject. The successful candidate should be highly motivated, well organised and curious to learn, with good communication skills (including writing). A full driving licence (evidence to be included with application) would be an advantage.

Supervision
The student will be based in Civil Engineering at the National University of Ireland, Galway under the supervision of Assoc. Prof. Bryan McCabe. The supervisory team will include Assoc. Prof. Mike Long (UCD) and representatives of all five industry supporters. The Fellowship will begin as soon as possible after the most suitable candidate is selected.

Fellowship
The fellowship provides a stipend of €23,750/annum, tenable for 4 years. University fees (€5,750/annum) are to be paid by the student from the stipend.

Further Information/Applications
Assoc. Prof. Bryan McCabe, Civil Engineering, School of Engineering, NUI Galway.
Phone +353 (0)91 492021, email: bryan.mccabe@nuigalway.ie

Application Procedure
Submit an electronic copy of your Curriculum Vitae, a cover letter expressing your suitability for the position and a copy of your driving licence to Dr. Bryan McCabe (bryan.mccabe@nuigalway.ie). Please note that after the online interview stage, the preferred candidate will be required to attend a follow-on interview in person at NUI Galway before a final decision is made.

Closing date
5pm on Friday 18th February 2022.