

Eighteen months post-doc in centrifuge modelling of geotechnical structures made with cement modified soils at University Gustave Eiffel – Campus of Nantes, France

We are seeking highly qualified and motivated persons to apply for a post-doctoral research position to study the mechanical behaviour of geotechnical structures made with cement modified soil (CMS) using centrifuge test on small-scale models at Geotechnical Centrifuges lab. (CG) and Materials for Transportation Infrastructures Lab. (MIT), two laboratories of Université Gustave Eiffel, located at Bouguenais (44), France.

The post-doctoral fellow will work in a collaborative project with a civil engineering company that aims to develop the use of CMS as construction materials for geotechnical structures.

In this context, the centrifuge modelling will first be used to check design rules of a gravity wall for structures made with CMS. In a second time, the impact of bearing soil and the impact of a vertical load on the geotechnical structure will be studied. Sliding and overturning will also be studied. In a third time, the effect of water saturation of the soil behind the wall will be examined. All these centrifuge tests will be undertaken in a strongbox with a transparent face which allows image analysis during loading, in order to examine displacement fields and failure mechanisms. Finally, the settlement under loading of a spread footing made with CMS will be studied. Results will be compared with results from settlements of classical granular substitution and from settlements without substitution.

In the framework of this postdoctoral position, the successful candidate will be in charge of the following tasks with the help of the technical team:

- Handling of the experimental set-up and the protocol in the centrifuge facility
- Realization of centrifuge tests
- Comparison of the experimental and numerical models

The deliverables to be produced by the successful candidate during his/her work in the project are the following:

- Report on the design of the experimental setup and its instrumentation
- Report on the validation of the physical and numerical models

The post-doc will be supervised by:

- Dr Thierry Dubreucq – Université Gustave Eiffel, member of the Geotechnical Centrifuges lab. (CG).
- Dr Thomas Lenoir – Université Gustave Eiffel, member of the Materials for Transportation Infrastructures Laboratory (MIT).

The ideal candidate should possess: • A recently completed PhD in Geotechnical Engineering with emphasis on experimental modelling • Expertise in the numerical modelling and in the reliability analysis of engineering structures • Experience in geotechnical testing • Evidence of scholarship; e.g. peer-reviewed publications. • Demonstrated ability to work independently and as a member in a collaborative project

The expected start date is March 2023. To apply for this position, please send a CV and the names and contact information of three references to Dr. Thomas Lenoir via email: thomas.lenoir@univ-eiffel.fr. Applications will be accepted until the position is filled.