

UENF Geotechnical Centrifuge Centre

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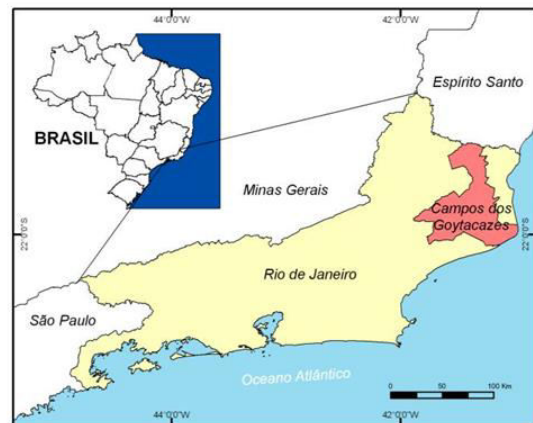
Owner: State University of Norte Fluminense Darcy Ribeiro - UENF

Location: Campos dos Goytacazes, Rio de Janeiro, Brazil

Introduction

We are a Laboratory that belongs to the State University of Norte Fluminense Darcy Ribeiro, founded in 1993 to contribute to the scientific and technological development of the North-Northwest Fluminense region. We are located in the municipality of Campos dos Goytacazes, about 280 km away towards the north of the state of Rio de Janeiro.

Installed at State University of Norte Fluminense Darcy Ribeiro – UENF, main campus, since 2007, and commissioned in 2010, the geotechnical centrifuge is capable of testing models weighing up to one ton in a gravitational environment that can reach up to one hundred times Earth's gravity. This centrifuge, the largest in Latin America, mainly enables the geotechnical community to carry out advanced studies in various areas of geotechnics such as Oil, Gas, Pipelines, Excavations, Landfills, Soil Reinforcement among others.



Universidade Estadual do Norte Fluminense Darcy Ribeiro

The UENF Geotechnical Centrifuge Centre.

Key Technical Specifications

UENF - Beam Centrifuge	
Manufacturer	Wyle Laboratories - USA
Year established	1995 (acquired), 2010 (comissioned)
Radius to base of soil container	3.75 m
Capacity	100 gton (1 ton @100g, max G-level: @200g)
Bucket area	0.75 m x 0.95 m
Major equipment	High Speed Cameras Miniature CPTU Several actuators Large scale consolidometer

Beam Centrifuge and Accessories

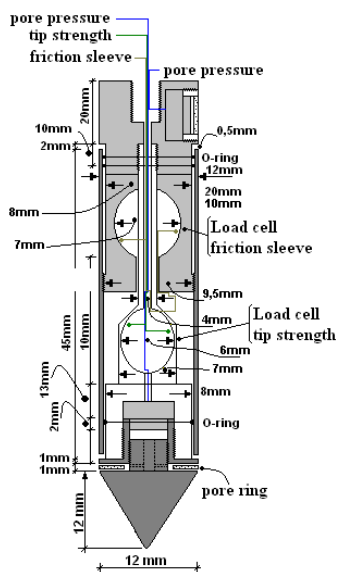
Among the main features, we highlight its ability to simulate models of up to one ton being subjected to a gravitational acceleration of 100g. The centrifuge has two baskets that house the containers (models) allowing two simultaneous tests. Test control and data acquisition in real time during the flight are carried out from the control room located outside the test chamber. The 800A motor that drives the centrifuge has a 500-HP power to make it rotate at a speed of 270rpm, the speed necessary to reach a maximum gravity of 200g. The physical models are built in appropriate boxes (rectangular and cylindrical containers), which are designed to support the efforts under which they are submitted at these acceleration levels. To monitor the physical models, the Laboratory has a set of miniaturized instruments, suitable for use in centrifuge test, to measure pore pressure, force, displacement, acceleration and total stress.



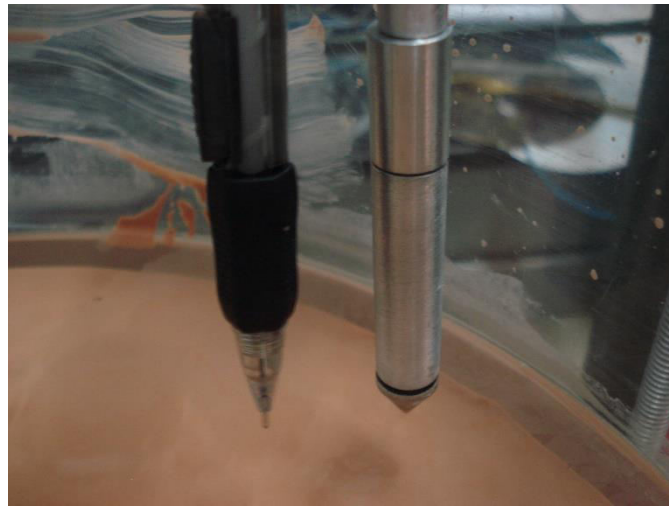
Wyle geotechnical centrifuge installed at UENF.

For geotechnical characterization of the model, the Laboratory has developed some tools as mini-vane, mini-CPTU and mini T-Bar.

For the model preparation, we count on large-scale consolidometer that can deliver 50 tf of vertical force. It is fully servo-controlled and can be remotely managed.



Mini-CPTU



Mini-CPTU



Large-scale Consolidometer