

**Department of Structural Engineering
University of California, San Diego
SE 290 Seminar**

Dr. Rodolfo Sancio

Geosyntec Consultants

**"Large Scale Indenter Test Program to Measure
Sub Gouge Displacements"**

Wednesday, December 10, 2014

1:00 pm - 1:50 pm, Cognitive Science Building, Room 002

Abstract

Ice gouging of the seabed presents a serious hazard to offshore pipelines in environments where the sea freezes each winter. Pipes have to be buried below the ice keel gouge depths such that the soil displacements caused by gouging (sub gouge displacements) are sufficiently small that the pipe is not overstressed. Predicting sub gouge displacements is a key aspect for design of pipelines in ice gouged environments, but there is considerable uncertainty in both magnitudes and factors influencing sub gouge deformations. This paper describes the general aspects of an experimental program that was carried out in an open field to produce large scale idealized gouges on engineered soil beds while measuring: 1) the horizontal force required to produce the gouge; 2) the sub gouge displacements in the soil; and 3) strain on a buried model pipeline. This test program was unique because of the large scale modeled, the six degrees of freedom that were allowed in the indenter, and that the indenter only had one contact surface with the soil (no bottom plate).

Biography

Dr. Rodolfo Sancio is a geotechnical engineer and lead of Geosyntec Consultants' Houston, Texas geotechnical engineering group. In 1995 he received a Civil Engineering degree from the Universidad Catolica Andres Bello in Caracas, Venezuela and M.S. and Ph.D. degrees in Geotechnical Engineering from the University of California, Berkeley in 1999 and 2003, respectively. Rodolfo has been a professional engineer in Texas since 2006.

He has 16 years of experience in most areas of practice such as: geotechnical site investigations and soil/rock characterization, development and execution of specialized laboratory testing programs for development of static and cyclic parameters for sands, clays, silts, and other man-made materials, foundation engineering for large industrial facilities including recommendations for the selection of shallow or deep foundation systems, site and foundation settlement evaluations, probabilistic and deterministic seismic hazard assessments, static and dynamic slope stability analysis, construction issues related to site preparation and development, site development feasibility studies, earthquake reconnaissance missions and post-earthquake assessment of the performance of earthen structures and foundations, large scale modeling, issues related

to seabed gouging by ice and the safety of offshore pipelines in cold regions, wave induced liquefaction analysis and pipeline flotation issues, and civil construction.

In the last 11 years of his practice he has focused on onshore and offshore geotechnical engineering issues for the oil and gas and petrochemical industry including projects in Saharan and Sub-Saharan Africa, the Caribbean, Gulf of Guinea, the North Caspian Sea, Sakhalin Island, Russia, Canada, Peru, Trinidad, and Venezuela establishing himself as a solution driven professional.

On practical research topics for industry, he co-led the team that conceptualized, implemented, and managed a unique large scale 1g test program in 2009 to study the effects of ice gouging on the performance of buried submarine pipelines. He is currently the Principal Investigator of a JIP to establish a large scale test facility to conduct similar tests. Rodolfo also conducted a seminal research study to evaluate the effect of coupled vertical and lateral interaction of steel catenary risers with the seabed. Additionally, in collaboration with Oxford University, recently conducted a feasibility study to evaluate the use of screw piles as an alternative deep foundation system for offshore wind farms to reduce the effect of driving noise on aquatic fauna.

Dr. Sancio has authored or coauthored over 20 journal and conference publications. He received the Golder Associates Victor Milligan Award for Ground Engineering in 2007 and the 2013 Shamsheer Prakash Award for Excellence in Geotechnical Engineering Practice.

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*Sponsored by Professor Ahmed Elgamal
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