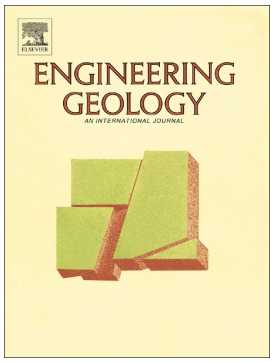

Effects of cone tip roughness, in-situ stress anisotropy and strength inhomogeneity on CPT data interpretation in layered marine clays: numerical study

Hongliang Ma, Mi Zhou, Yuxia Hu, Muhammad Shazzad Hossain

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Effects of Cone Tip Roughness, *In-Situ* Stress Anisotropy and Strength Inhomogeneity on CPT Data Interpretation in Layered Marine Clays: Numerical Study

Hongliang Ma[1], Mi Zhou[2], Yuxia Hu[3], and Muhammad Shazzad Hossain[4]

Abstract: This paper explores the effects of cone tip roughness factor, soil *in situ* stress ratio and strength non-homogeneity on cone tip resistance in three-layer clay deposits, aiming at presenting a general CPT data interpretation framework to extract soil layered profiles and strengths. Large deformation finite element (LDFE) analysis has been carried out, simulating continuous penetration of the standard cone penetrometer from the seabed surface, with the consideration of cone tip roughness factor, *in situ* stress ratio and soil strength non-homogeneity within a practical range. In the LDFE analyses, a thin relatively stiff or soft clay layer was interbedded in a uniform or NC clay deposit, with various strength ratios between two successive layers and thickness ratios of the thin layer to the cone diameter explored.

The results have shown that the noted factors have significant influence on net cone penetration resistance in stratified deposits. These influences in the layered deposits were found to be similar in magnitude to those on the cone limiting resistance in a single clay

[1] PhD candidate (BEng, MEng), School of Civil, Environmental and Mining Engineering, The University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Tel: +61 (0)8 6488 3141, Fax: +61 (0)8 6488 1018, Email: hongliang.ma@research.uwa.edu.au

[2] Former Research Associate (PhD), School of Civil, Environmental and Mining Engineering, The University of Western Australia, Email: michaelmizhou@163.com

[3] Corresponding Author, Professor (PhD, MIEAust), School of Civil and Resource Engineering, The University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Tel: +61 (0)8 6488 8182, Fax: +61 (0)8 6488 1018, Email: yuxia.hu@uwa.edu.au

[4] Senior Research Fellow (BEng, MEng, PhD, MIEAust), ARC DECRA Fellow, Centre for Offshore Foundation Systems (COFS), The University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Tel: +61 8 6488 7358, Fax: +61 8 6488 1044, Email: muhammad.hossain@uwa.edu.au