

# **Elastic Buckling of Slender Non – Prismatic Piles Partially or Completely Embedded in Elastic Foundation Soil Using the Finite Differences Method**

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## **ABSTRACT**

This study is an attempt to predict the critical buckling load for a slender elastic non-prismatic pile partially or completely embedded in foundation soil using finite difference method. The soil is modelled as an elastic Winkler foundation model having both normal and tangential (frictional) moduli of subgrade reactions. These moduli of subgrade reaction can be constant or variable with the depth of the pile. The foundation soil reaction at the pile base is considered in this study and modelled as an equivalent elastic spring in the end of the pile. The end bearing resistance of the non-prismatic pile and the reduction in axial force due to reaction of the soil friction are included.

The differential equations which represent the soil displacement is formulated in the first finite difference method. In order to get the buckling load, a computer programme is written and the principle of Eigenvalue is applied. To show the effect of various factors on the non-prismatic pile buckling load, selected case studies are investigated.