

ANALYSIS OF PILED-RAFT FOUNDATIONS SUBJECTED TO GENERAL LOADING

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ABSTRACT

This paper submits a proposed method of analyzing a piled-raft foundation subjected to general loading as the requirements of design for rafts enhanced with piles. In this method, the analysis considers a raft in contact with the ground soil and it can be used for the problems of the variation of soil modulus from layer to layer. Moreover, this method has the advantage that the data is easy to prepare and does not involve creating large meshes as would be required for finite element solutions. Regardless to other factors, the analysis shows that the stiffness ratios (E_{pile}/E_{soil} and E_{raft}/E_{soil}) and pile spacing (S/D) play significant effects on the piled-raft displacements and loadings. To verify the reliability of this method, the obtained results of FLAC-3D are compared with the field tests of a large scale group tested under horizontal loading. Good agreement between field loading and the proposed method is demonstrated.

KEYWORDS: Foundations, Piled-Raft, Interface loads, Soil-Structure Interaction, Displacements, Stiffness Ratio, General Loading