

Bending of orthotropic plates resting on Pasternak' s foundations using mixed shear deformation theory

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Abstract

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Abstract The mixed first-order shear deformation plate theory (MFPT) is employed to study the bending response of simply-supported orthotropic plates. The present plate is subjected to a mechanical load and resting on Pasternak' s model or Winkler' s model of elastic foundation or without any elastic foundation. Several examples are presented to verify the accuracy of the present theory. Numerical results for deflection and stresses are presented. The proposed MFPT is shown simply to implement and capable of giving satisfactory results for shear deformable plates under static loads and resting on two-parameter elastic foundation. The results presented here show that the characteristics of deflection and stresses are significantly influenced by the elastic foundation stiffness, plate aspect ratio and side-to-thickness ratio.

Keywords: Mixed theory Bending Rectangular plates Pasternak' s model

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