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BENDING OF RECTANGULAR PLATE OF VARIABLE THICKNESS UNDER NORMAL VARIABLE LOAD

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Abstract

The problems of deflection of rectangular plates of variable thickness were earlier discussed by many authors, a review of which may found in the book of Timoshenko and Woinowsky-Krieger [9], Conway [1] solved the problem of bending of symmetrical loaded circular plate of variable thickness and that [2] of the axially symmetric plate with linearly varying thickness. Mansfield [5, 6], Olsson [7], Reissner [8] also discussed some cases of bending of plates. Fabre and Gillig [3] obtained the approximate solution of the bending of a simply supported rectangular plate of linearly varying thickness under normal hydrostatic load by using fundamental perturbation technique. Kundu and Basuli [4] solved the problem of the bending of rectangular plate of variable thickness under normal variable load where flexural rigidity varies in one direction as a power of the distance from the centre. In this problem an attempt has been made to obtain an approximate solution of the bending of a rectangular plate with variable thickness in which the flexural rigidity is of a homogeneous quadratic variation in both x and y directions and the plate is subjected to variable normal loads, the boundary being simply supported.