

A formulation of assumed strain nine-node plate element based on Reissner-Mindlin type kinematic model

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SUMMARY

This paper presents a new nine-node quadrilateral Reissner-Mindlin plate element with 27-d.o.f. valid for the analysis of thick to very thin plates. The element is shown to avoid shear locking, converge to the Kirchhoff plate theory as the plate thickness approaches zero, and generally exhibits excellent behaviour in a series of standard problems and tests. Its formulation is derived on the basis of the displacement variational principle using some simple criteria in order to eliminate undesirable shear locking effect. The shear strain-sampling points are located at optimal positions which is shown by using the concept of reduced minimization.
