

عنوان مقاله:

Buckling analysis of multistory axisymmetric functionally graded bending frames with semi-rigid connections

محل انتشار:

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نویسنده:

Abbas Heydari - Department of Civil Engineering, Sharif University of Technology, Tehran, Iran

خلاصه مقاله:

This paper investigates the effect of semi-rigid connections and relative rotations at joints on the critical load of multistory axisymmetric non-sway functionally graded bending frames subjected to axial compression without eccentricity by employing stability functions. The transverse variations of mechanical properties of beams and columns with rectangular sections are modeled by considering volume fraction distribution in the metal-ceramic functionally graded material (FGM) and material index. The equivalent bending rigidity of members made up of FGM is calculated by considering curvature of members caused by pure bending. The distortion as well as extras rotations are assumed to be zero due to negligible shear stress with respect to the normal bending stress. The decreasing of beams' bending stiffness at joints of the frame caused by relative rotation between beams and columns is modeled by applying reduction coefficient which takes real positive and less than or equal to unit amounts. However results show that changes in thickness, length, volume fraction and material index of the members do not affect the stiffness coefficient, modified stiffness coefficient, axisymmetric stiffness coefficient and carry over factor, but the buckling loads of first modes are dependent on mentioned parameters

کلمات کلیدی:

Buckling, FGM, Axisymmetric bending frame, Multistory frame, Non-sway modes, Semi-rigid joint

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