

Stability design of plane steel frames using linearized buckling analysis

We formulate a stability design procedure for plane steel frames subject to combination of vertical and earthquake loadings. Interaction of axial force and bending moment is taken into account, which is not negligible in the case of the combined loadings. In the numerical example, a braced frame with a slender column is designed in accordance with the current design code and the proposed method. Comparison of the design results demonstrates the possibility of reducing member sizes by the use of the present method. We also show the validity of the estimate of the inelastic buckling load obtained by the present approach by comparing it with the buckling load computed by the finite element method.