

Quasi-nonlinear method for stability analysis of R/C frame structures

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SUMMARY

This paper presents a simple method for determining the bearing capacity and stability of line reinforced concrete structures and frames significantly exposed to compressive loads. The quasi-nonlinear method is based on the linear static analysis used to determine the section forces, while the buckling length, i.e. slenderness, is determined by using a geometrically nonlinear analysis or approximate methods common in engineering practice. These results are introduced into the spectrum of the bearing capacity to determine the failure compressive force for each element. The bearing capacity spectra are non-dimensional graphs developed by numerical experiments with a material and geometrically nonlinear model. They cover the field of both the centric and eccentric pressure with low and high eccentricities as well as the field of slenderness according to the national codes. The efficiency of this method has been illustrated by an example and proved by a series of results from the relevant literature.
