

## **A Method for the Symmetrical Foundation Plinth Calculation**

The proposed method for the symmetrical foundation plinth calculation is a modified version of the classic “Trapezium” method. It consists of splitting up the foundation into four brackets, fixed into the pier, by carrying out real cuts, rather than virtual, with vertical planes passing through the edges of the pier and the corresponding edges of the plinth.

The following condition is imposed: that the span of each bracket is no smaller than the plinth height (Saint-Venant principle). In addition to this, it is assumed that the pressure in the soil is continuous and linear. This last condition is consequent to the hypothesis that the contact surface of the foundation with the soil remains level after the strain (in working cycle).

The study examines the classic and the modified methods and it points out, beyond the inaccuracies due to the linearity hypothesis of the pressure diagram, the unreliability of the former method and the considerable approach to the real model of the second method, which is theoretically more acceptable.

With regard to the rectangular plinth with eccentric load, the study highlights, for the classic method, the essential condition of the height variability of the fixed sections in order to respect both the vertical displacement congruence and the equilibrium. It also points out that the height constancy of the fixed sections is inexact, since it causes the discontinuity of the pressure states in the soil, even if the congruence and equilibrium are ensured.