

SUMMARY

A finite element approach is presented to determine the bearing capacity of shallow footings on silica sand deposits. The approach can take into account the effects of relative density and stress level on the shear strength of granular soil and is applicable to a fairly large effective stress range. The strength of sand is characterized by a non-linear Mohr–Coulomb criterion which depends on maximum and critical friction angles, widely used parameters in engineering practice. The results of analysis indicate that this approach yields reliable predictions of bearing capacity and, in particular, it can model the volumetric behaviour of the soil at failure.