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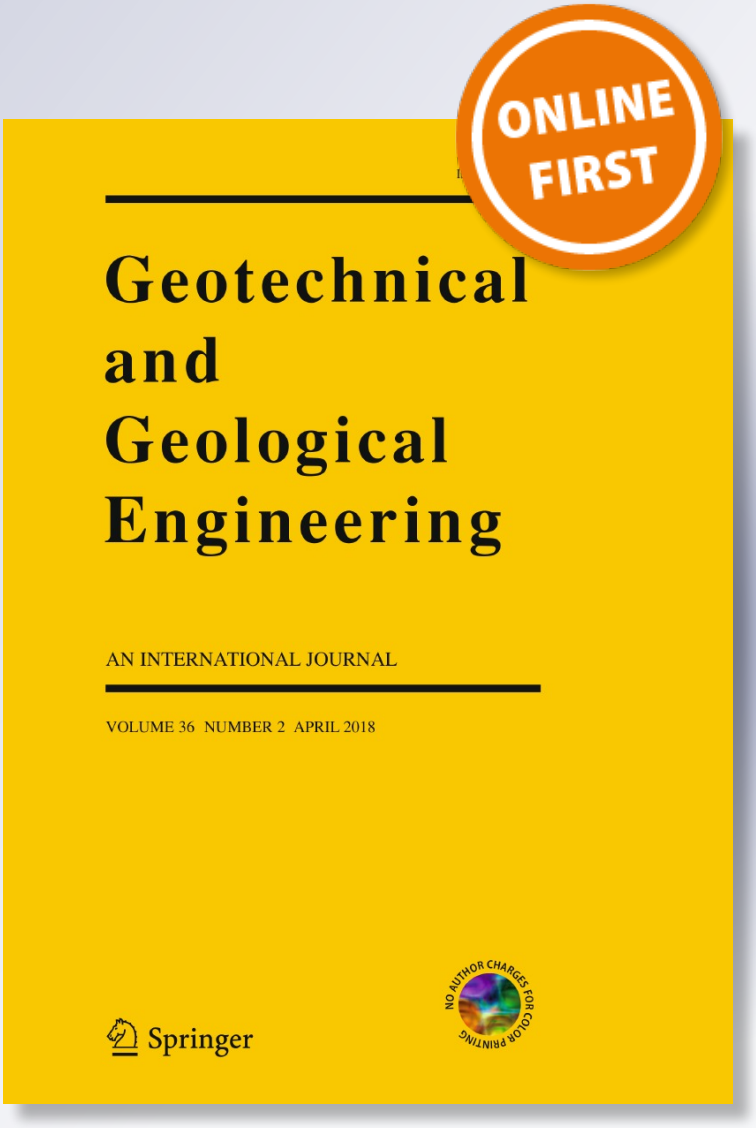
Geotechnical and Geological Engineering
An International Journal

ISSN 0960-3182

Geotech Geol Eng
DOI 10.1007/s10706-018-0533-8



Springer

Geotech Geol Eng
https://doi.org/10.1007/s10706-018-0533-8

TECHNICAL NOTE

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Received: 7 May 2015 / Accepted: 23 March 2018

Abstract In numerical modelling of soil response it is often required to define an accurate value for the stiffness at small strains (G_0). Such values are usually obtained from tables or charts available in the literature, rather than being directly measured in tests. These will however be sufficiently accurate only if a similar soil has already been studied and described. In the present paper, the results of a series of laboratory tests conducted on a soil from southern Italy are reported. In these tests, a well-established empirical relationship linking small-strain stiffness values to state parameters was calibrated, allowing the determination of accurate G_0 values for the specific soil, and contributing to the collection of data in the literature. The bender element technique, in conjunction with standard triaxial testing on reconstituted soil samples, was employed. A series of isotropic compression tests was used for the calibration, and the resulting power law was then checked through shear testing. The proposed equation compares well with results reported in the literature for different types of soils. On approaching failure a change in behaviour is evident; this is in accordance with observations already reported in the literature for a variety of soils and is subject to several interpretations, but does not substantially interfere with the general validity of the proposed correlation, which can therefore be adopted as a useful empirical equation for determining G_0 values for this soil.

Keywords Small-strain stiffness · Laboratory testing · Bender elements · Calibration · Small strain

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Published online: 29 March 2018