ELECTRONIC SPREADSHEET FOR THE CALCULATION OF THE LOAD BEARING CAPACITY AND ALLOWABLE STRESS OF THE SOIL FOR ISOLATED FOOTING

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**ABSTRACT**: For geotechnical design of shallow foundations it is necessary to know the allowable stress of the soil, obtained indirectly from the load bearing capacity; or directly, applying the semi-empirical methods. An alternative to automate these calculations is the use of spreadsheet, a simple tool, aiming to optimize time and reduce human error. To demonstrate the applicability and effectiveness of this tool, a spreadsheet was developed using the Microsoft Excel software, based on some variables such as: cohesion; friction angle; specific weight; groundwater level; among others, in order to estimate the load bearing capacity and the allowable stress for isolated footing on different occasions, by several methodologies, including the analytical and the semi-empirical methods, and the Van der Veen Method, which extrapolates the load-settlement curve, obtained by the Plate Load Test. In addition, the spreadsheet shows graphically the comparison between the results obtained. Finally, the tool was applied on three real scenarios: (1) Square isolated footing with variation of the settlement quota; (2) rectangular isolated footing with variation of the water level and (3) circular isolated footing with execution of the Plate Load Test, proving that it is possible to test several hypotheses for the same problem in a short period of time.

*Keywords*: load bearing capacity, allowable stress, automation.