

SPREADSHEETS APPLICATION IN SPECIAL FOOTING DESIGN

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ABSTRACT

This paper will try to present a simple solution to the problem encountered by most structural designers of concrete structures especially in the design of special footings (i.e., strap, trapezoidal, rectangular square and combined footings). Spreadsheets as a tool for the design of special footings is considered to be a better alternative compared to manual design calculations and to using ready-to-use computer design programs. Excel Spreadsheets are used to handle the standard design procedures developed for the different mentioned structural elements. A great deal of space was devoted to the presentation of the nature of spreadsheets to give an overview of the spreadsheet used in this paper. A detailed discussion on the design principles of each of the special footings is presented. The appendix contains the spreadsheet developed in this project as well as a presentation of a tutorial on the basic operation of the spreadsheet.

This paper also demonstrates the use of spreadsheets to supplement and enhance traditional design methods of special footings. The paper focuses on example spreadsheets, which have been integrated into the design of the aforementioned structural elements.

This report also introduces and explains the standard design spreadsheets developed in this project, explains the design concepts behind each procedure, and finally provides illustrative spreadsheet template examples.