ANALYSIS OF CONTINUOUS BEAMS TO BS 8110 USING SPREADSHEETS

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The determination of bending moments and shear forces in continuous beams requires considerable amount of time when carried out manually. A computer program would be much useful for this type of analysis. This paper describes the features of a worksheet developed for this purpose, using LOTUS 1-2-3.

A rigorous analysis of continuous beams and one way spanning slabs could be done by this worksheet for the design based on the current British code BS 8110. The beams could be of any shape and the end conditions may be either fixed or simply supported. The moment distribution technique is used to obtain the support moments, since its tabular form is most suitable for spreadsheets.

Given the basic input, such as the number of spans, end fixities, sectional dimensions and the applied loading, the worksheet calculates the design bending moments and shear forces. Redistribution of moment could also be done, if desired. With the graphic capabilities of the package, the bending moment diagrams, shear force diagrams and design envelopes could also be viewed.

It is concluded that the spreadsheets could be used as a powerful design tool. The proper use of this worksheet enables the designer to cut down much of the time spent on analysis, which is generally repetitive in nature.