A curiosity of yield-line analysis*

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Mr Taylor and Mr Mohamedbhai point out the closeness of the collapse loads for the correct and imaginary modes for rectangular slabs. Although this is of interest, it is not particularly useful, as the selection of the correct mode is simpler than is implied in their paper.

With the notation used in the paper:

if $p < 1$, mode A occurs and equation (2) applies for w;

if $p > 1$, mode B occurs and equation (4) applies for w.

There is therefore no difficulty in selecting the correct mode and the corresponding collapse load.

In any case, a better approximation for w than the 'imaginary' value is given[1] by:

$$w = \frac{2m{v_{34}}^2}{L^2}(p^2 + p + 1)$$

This formula shows a maximum deviation of 1·6% from the correct value, in which sense it is more accurate than the 'imaginary' value. It is applicable to any value of p, and is simpler to compute.

REFERENCE

1. COMITE EUROPEEN DU BETON. *The application of the yield-line theory to calculations of the flexural strength of slabs and flat-slab floors.* Translated from the French by C. V. AMERONGEN. London, Cement and Concrete Association. March 1962. pp. 16. Information Bulletin No. 35.

*Pages 221 to 224 of *Magazine* No. 69.