MOMENT COEFFICIENTS OF TWO -WAY SLABS BY FINITE ELEMENT ANALYSIS

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Abstract

The objective of this paper is to determine the moment distribution for two-way slabs with and without continuous drop panels along column lines by using the finite element method (FEM). First, the FEM was applied to three cases of two-way slabs with geometries and boundary conditions covered by the building design standard of the Engineering Institute of Thailand (EIT). The resulting moments at critical sections in the slab strips using the FEM are in good agreement with the EIT specifications with a maximum difference of less than 11.5%. However, for slabs with beams between all supports, the beam stiffness has significant effects on the distribution of moments in the slabs. For beam-to-slab flexural stiffness ratio of 2.49, the moments at the mid-span in the interior panel and at the exterior column in the exterior panel differ from the EIT specifications considerably. The FEM was then applied to two-way slabs with continuous drop panels along column lines, having the beam-to-slab flexural stiffness ratio of 2.63. The longitudinal distribution of moments is consistently close to the EIT specifications. However, the lateral distribution of moments differs significantly. The FEM results also agree well with the study by Paultre and Moisan (2002). This suggests that the EIT standard may in need of revision for slabs with beams between all supports and with some provisions for two-way slabs with continuous drop panels.