



FINITE ELEMENT ANALYSIS OF DEEP BEAM UNDER DIRECT AND INDIRECT LOAD

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ABSTRACT

This research study the effect of exist of opening in web of deep beam loaded directly and indirectly and the behavior of reinforced concrete deep beams without with and without web reinforcement, the opening size and shear span ratio (a/d) was constant. Nonlinear analysis using the finite element method with ANSYS software release 12.0 program was used to predict the ultimate load capacity and crack propagation for reinforced concrete deep beams with openings. The adopted beam models depend on experimental test program of reinforced concrete deep beam with and without openings and the finite element analysis result showed a good agreement with small amount of deference in ultimate beam capacity with (ANSYS) analysis and it was completely efficient to simulate the behavior of reinforced concrete deep beams. The mid-span deflection at ultimate applied load and inclined cracked were highly compatible with experimental results. The model with opening in the shear span shows a reduction in the load-carrying capacity of beam and adding the vertical stirrup has improve the capacity of ultimate beam load.

KEYWORDS: Reinforced Concrete Deep Beam, Direct and Indirect Load, Finite Element Analysis.