

عنوان مقاله:

Strut and Tie Modeling for RC Deep Beams under non-Central Loadings

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خلاصه مقاله:

This work aims at presenting detailed procedures accompanied by numerical examples for analyzing and designing reinforced concrete deep beams that subjected to non-central loadings based on Strut and Tie method (STM). The subjected loadings were moved from the center of the beam span towards the supports reaching the maximum non-centrality could be achieved (after which the beams became 'not deep' from ACI 318M-14 point of view). A total of three deep beams with three different types of loadings were taken into considerations; one concentrated force, two concentrated forces and uniformly distributed load. Every specimen had a cross section of 150 × 400 mm and a total length of 1000 mm. Generally, it was found that moving load from the span center towards one of the supports leads to worth notable decreases in the beam ultimate capacity. Therefore, in the case of one-concentrated force, the ultimate load capacity decreased by 30.2% when left shear span to effective depth ratio (aL/d) decreased from 1.3 to 0.65. While in the cases of two-concentrated forces or uniformly distributed loading, it was found that changing (aL/d) ratio from 1.02 to 0.37 led to decrease the deep beam ultimate capacity by 30.5%

کلمات کلیدی:

RC; Deep beams; STM; Load non-Centrality; Design Procedures

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