

6. Method of Reinforcing Footing Beam with Large Opening - Shear Behavior of RC Footing Beams Reinforced by Bars around the Opening -

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Since forming an opening in an RC beam reduces structural performance, the general recommendation is to keep the diameter of such openings to $1/3$ of beam depth or less. However, in some cases, to allow underground space inspections, a large opening through which a person can pass must be provided in a footing beam. Because of this limitation, the footing beam may be determined from the size of the opening regardless of the result of the structural design, which can increase costs for mid- to low-rise buildings.

To reduce the depth of the footing beam, we propose a reinforcement method that features an opening with a diameter of half the beam depth, and evaluate the structural performance experimentally. As the results, the effect of reinforcement bars placed around the opening on the crack width and shear strength, and the evaluation method of structural performance have been verified

Key words: large opening, footing beam, shear strength, crack width