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Punching shear capacity assessment of column footings in current design codes is mainly based on experiments performed on reinforced concrete flat slabs. Experimental investigations of footings were quite rare and they were mostly performed in laboratories, where the soil was simulated in a variety of ways. For that reason, in this study an experimental investigation of footing punching was conducted in situ with a test frame buried in the subgrade soil with predesigned and controlled characteristics. Thus the answer was given to the question of how the individual characteristics of the footings and of the soil affect the punching shear capacity and how accurately the punching shear capacity of tested column footings can be predicted according to Eurocode 2 and ACI 318–19. A special attention in this paper is paid to the effects of soil reactive pressures and stiffness of the footing–subsoil system on the punching shear capacity of footings, based on which a modification of the expressions for punching shear capacity according to ACI 318–19 and Eurocode 2 is proposed. In most cases, a significantly better agreement with the results of experiments (both our own and those of other researchers) is achieved by the proposed modification compared to the considered design codes.

