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Lateral Resistance of Anchor-Bolt Joints Between Timber-Sills and Foundations I.

Single-shear tests of anchor-bolt joints of Japanese post and beam constructions

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Abstract: Lateral resistance of single-anchor-bolt joints was examined experimentally for ordinary specifications of Japanese post and beam constructions. Tested bolts were 12 or 16 mm in diameter and lead-hole clearances were 0, 3, and 6 mm. The specimens with 12 mm bolts were loaded parallel and perpendicular to the grain, and the specimens with 16 mm bolts were loaded only parallel to the grain. The principal test results were as follows. (1) Anchor-bolt joints loaded perpendicular to the grain had much lower maximum resistance, much smaller maximum slips and much lower energy capacities. (2) Maximum lateral resistance and maximum slips of the anchor-bolt joints with 16 mm bolts varied over a wide range. (3) The energy absorption capacities of the anchor-bolt joints with 16 mm bolts closely resembled those of the joints with 12 mm bolts in spite of their larger maximum lateral resistance and initial stiffness. (4) Safety factors calculated from the fifth percentile lower limit maximum resistance and the short term allowable resistance were larger for the joints with 12 mm bolts than for the joints with 16 mm bolts.

Keywords: maximum lateral resistance, initial stiffness, energy absorption capacity, lead-hole clearance, length/diameter ratio



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