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Behaviour of Small Diameter Steel Tubes under Axial Compression

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Abstract

Small diameter steel tubes are used in many civil engineering applications. Recently, the behaviour of concrete columns reinforced with small diameter steel tubes was experimentally and analytically investigated. This study explores the effect of unsupported length to the outside diameter (L/D) ratio on the axial compressive behaviour of small diameter steel tubes, which has not yet been adequately investigated. Galvanized and cold-formed steel tube specimens with L/D ratio of 2 to 12 were tested. It was observed that for specimens with L/D ratio of 2 and 4, the compressive failure occurred due to local elephant's foot buckling. However, the compressive failure mode changed to global buckling for specimens with L/D

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