Enhanced Ferrocement Jackets for Strengthening Long Reinforced Concrete Columns

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Strengthening slender reinforced concrete (RC) columns is a challenge because their sensitivity to overall buckling and the combination of the bending and compressive stresses. This paper presents experimental study for strengthening twenty long RC columns using enhanced ferrocement jackets. The column specimens have slenderness ratio of 17.6 and two different cross-sections (square and rectangular). The utilized expanded metal mesh layers have different weights, lengths and numbers for each jacket. The twenty strengthened specimens and four reference non-jacketed specimens were tested under concentric compression loading. The results demonstrated the effectiveness of the ferrocement jacket in improving the column capacity, increasing the stiffness, and reducing the lateral deformation. The significance of the jackets is more evident for long RC columns with larger cross-section area, and for jackets with larger volume fraction of metal mesh layers at the middle-third of the column height.