

Assessment of structural behavior of long RC columns laterally reinforced with EMM metal mesh as untraditional reinforcement

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Using traditional confinement in reinforced concrete columns with small spacing between ties may lead to reinforcement congestion of concrete core and limitations in confining the concrete core. Moreover, ties interrupt the continuity and create a plane of weakness between core and concrete cover. Therefore, ties may not provide enough confinement for RC columns. This paper presents a new technique of confinement using metal meshes with high mechanical properties with or instead of ties as lateral reinforcement for long RC columns studying the pre-load effect. Eight square RC column specimens with $\lambda = 16.296$ were reinforced laterally by ties with volumetric ratios ($\rho = 0.413\%$, 0.206% , and 0%) and expanded metal mesh. The experimental results indicated that the columns, confined with that new technique of lateral reinforcement, exhibited significant improvement in the column capacity, energy absorption and ductility. Ties may be completely replaced with double layer of metal mesh with high mechanical properties without reduction in ultimate load capacity.