

## SRG jacketing of short RC columns: Experimental Investigation

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### Extended abstract

The efficiency of a novel jacketing technique (Thermou and Pantazopoulou (2007), Thermou et al. (2015, 2016)), the steel-reinforced concrete jackets, in strengthening reinforced concrete (RC) short columns is experimentally investigated in this paper. The novel jacketing device was applied on 24 short RC prisms which had a 200 mm square cross section representing a 1:2 scaled model of a prototype column with a 400 mm square cross section. The height of the specimens was 320 mm (Fig. 1). The longitudinal reinforcement comprised 4 $\Phi$ 12 bars and placed at the corners of the specimens as shown in (Fig. 1). Parameters of the investigation were the stirrup spacing as to provide different volumetric ratios ( $s=50$  mm, 75 mm, 150 mm), the density of the fabric (low density 1.57 chords/cm and medium density 4.72 chords/cm) and the number of fabric layers (1 and 2). Three group of specimens were defined based on the stirrups spacing (A, B, C see Fig. 1). The specimens were subjected to monotonic concentric uniaxial compression load and both axial and lateral strains were measured (Fig. 2).

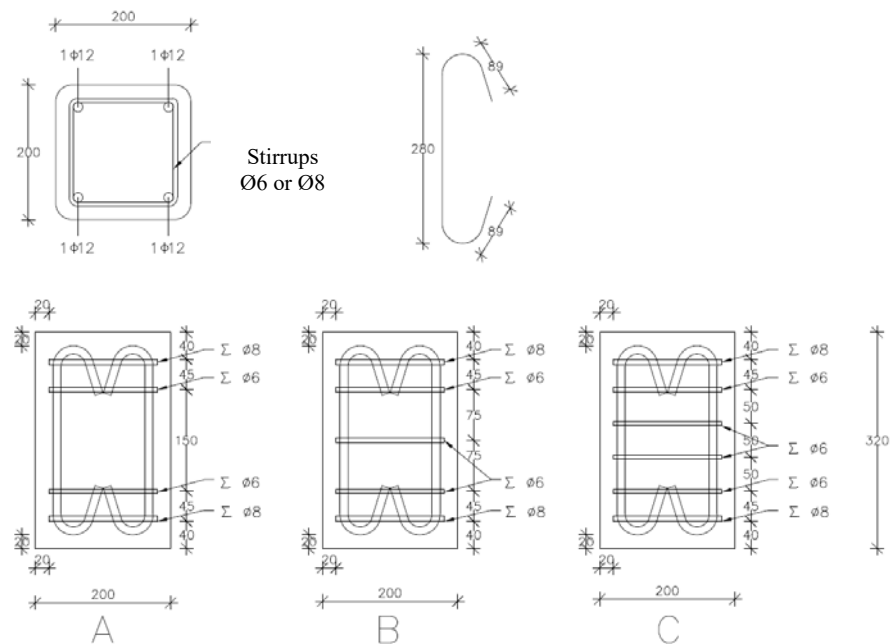


Fig. 1 Specimen reinforcement detailing.



Fig. 2 Test setup.

The specimens in their vast majority failed due to rupture of the steel fabric rendering thus the application of the jackets successful (Fig. 3).

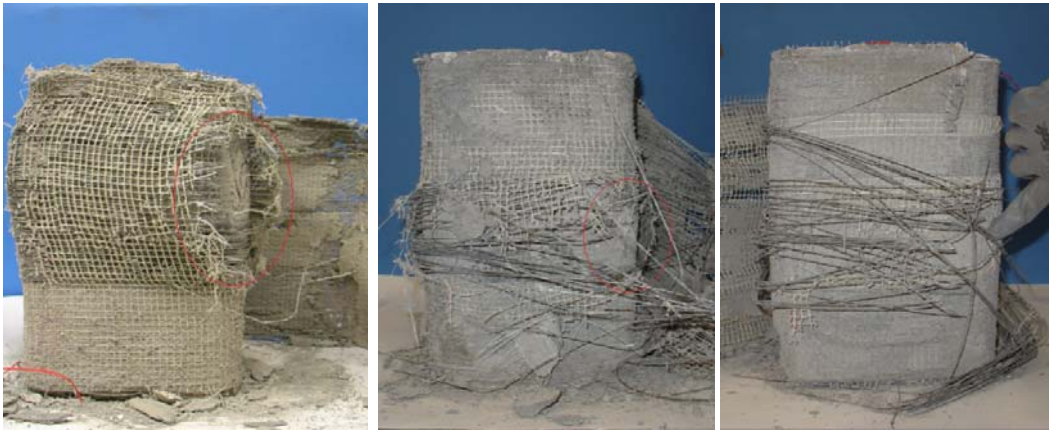


Fig. 3 SRG confined columns at failure state.

Test results have shown that the SRG jackets increased strength whereas deformation capacity was improved substantially. Some representative stress-strain curves of group A specimens are shown in Fig. (4).

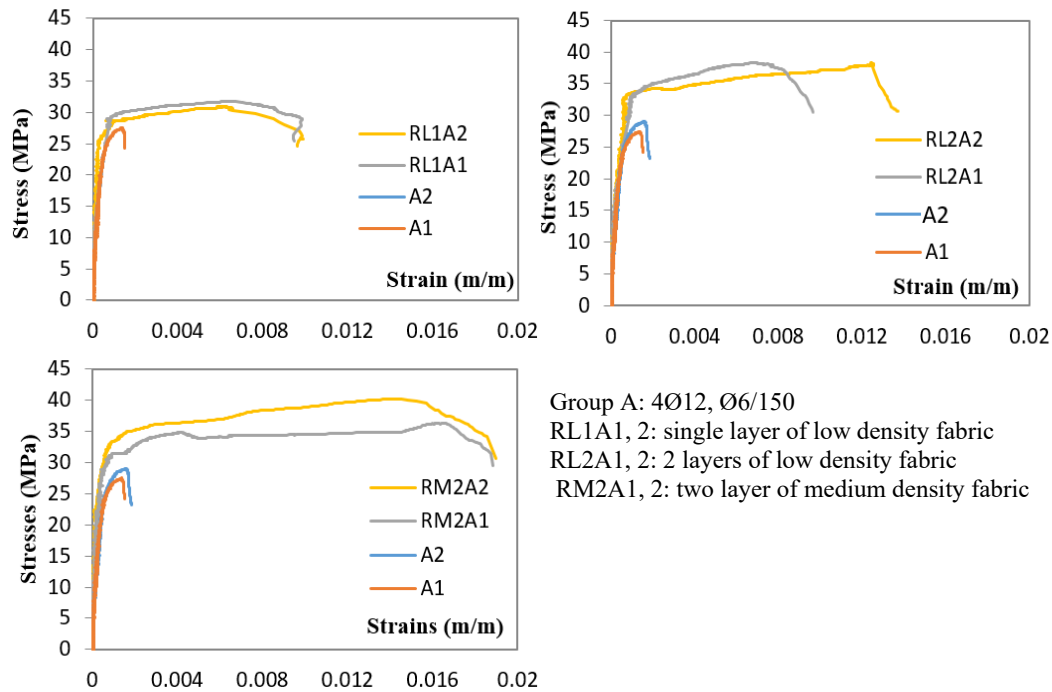


Fig. 4 Stress – strain curves of group A specimens

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### References

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