The effects of diagonal web reinforcement on cyclic behaviour of lightweight structural walls

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Abstract: This study focuses on the seismic behaviour of lightweight reinforced concrete shear walls with different web reinforcement modes, with the aim of discovering an optimised web reinforcement mode to increase ductility and shear resistance. The paper describes a comprehensive experimental programme involving four lightweight concrete shear wall specimens with the same shear span ratio of 1.43. The wall specimens are reinforced against shear, either conventionally (orthogonal grids of web reinforcement) or with diagonal bars. The different deformation characteristics, hysteretic response, stiffness attenuation and energy dissipation capacity between four wall specimens are investigated. The test results clearly show that diagonal web reinforcement results in lower shear strains near the wall base and improved energy dissipation characteristics. [doi: 10.1680/stco.2009.10.1.35]

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