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Seismic Retrofit and Repair of Reinforced Concrete with Carbon Overlays

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Aspects relating to the shear and flexural strength of masonry walls in earthquake zones are presented. To mitigate seismic and ductility deficiencies of masonry walls, carbon overlays were investigated as a retrofit and repair technique. Five tests of single story masonry walls were conducted, three in-plane or reinforced structural wall tests and two out-of-plane or flexural tests of unreinforced walls. The in-plane wall tests involved an "as-built" shear wall, a repaired wall and a retrofitted wall. The flexural tests involved retrofit and strengthening of two unreinforced masonry walls. The experimental results demonstrate that significant increases in strength and deformation capacity can be achieved with carbon overlays. Recommendations for carbon overlay retrofit design for masonry walls in out-of-plane bending are given.