

Fyfe Company Technical Report Abstract BCJ-2

Repair of Beam Column Joints using GFRP Sheets

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An experimental program is conducted to investigate the behavior of beam-column joints before and after repair using GFRP sheets. A beam-column specimen was first tested to confirm the joint vulnerability to shear failure. The joint column was subjected to a constant axial load while the beam tip was subjected to a cyclic load. The proposed repair technique was successful in improving the joint behavior by increasing the shear capacity of the joint. It was illustrated that it is possible to increase the ductility of the system by eliminating the undesirable brittle modes of failure. On the basis of the experimental results, a simple design methodology is proposed for calculating the design thickness of the Tyfo Fiberwrap System. The proposed repair technique was successful in improving the joint behavior of beam-column joints before and after repair using GFRP sheets. It was illustrated that it is possible to increase the ductility of the system by eliminating the undesirable brittle modes of failure.