

## **Fyfe Company Technical Report Abstract FB-17**

### **Retrofit of Reinforced Concrete Members Using Advanced Composite Materials**

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Practical applications for the use of composite materials for retrofitting of reinforced concrete structural members of buildings and bridges were investigated in this research project. Eleven T-shape simply supported beams, representing half scale bridge girders, were tested under repeated cyclic (up to 1,000,000 cycles) and monotonic load conditions. Experimental work was conducted to investigate the seismic response of retrofitted beams that present shear and bar curtailment deficiencies. Two full-scale T-section cantilever beams were built and tested under reversed cyclic loading. Results indicate that the design of flexural enhancement with Tyfo SCH-41S may be used to enhance the flexural strength at the bar cut-off points. Experimental work was conducted on six square and rectangular columns. Four of the six columns were retrofitted with Tyfo SEH-51A jackets. The results from the test confirm that the jackets provide excellent confinement in rectangular and square reinforced concrete columns, increasing both the ultimate strength and strain.