

**Flexural Response of Corroded Reinforced Concrete Beams at Elevated
Temperatures**

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By

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Abstract

This first of its kind study examines the effects of fire on corrosion damaged reinforced concrete beams. Nineteen beams were cast with the same external dimensions and amount of reinforcement. Corrosion was induced in the beams by a constant current source. One group of specimens were tested at constant service load while being exposed to fire conditions until failure. A second group of specimens were exposed to a pre-determined fire exposure while under service load then allowed to cool; subsequently the cooled beams were loaded to failure to study the residual flexural capacity after a fire exposure.

The results indicated that corrosion damaged reinforced concrete beams reached higher deflection values during a fire exposure as the level of corrosion damage increased. Residual test results showed that the ultimate loads of corrosion damaged beams decreased with increasing corrosion level, while deflection at ultimate load increased.