

## **Residual strength of corrosion-damaged reinforced concrete beams**

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### **Abstract:**

In this work, an effort has been made to first observe the effect of reinforcement corrosion on flexural behavior of reinforced concrete beams and then to develop a model based on the test data to predict their residual flexural strength. Test data were gathered from the testing of 56 reinforced concrete beam specimens that were subjected to a varying degree of accelerated corrosion. It has been observed that the product of corrosion current density and corrosion period  $I_{corr}T$  is the most significant factor affecting the flexural strength of a corroded beam. Based on the experimental data, a two-step approach is proposed to predict the residual flexural strength of a corroded beam. First, the flexural strength is calculated using the reduced area of corroded bars, and then this value is multiplied by a correction factor that is formulated through a regression analysis of test data to take into account bond, slip, and other applicable factors.