

# A MIXED SMEARED/DISCRETE CRACKING MODELING APPROACH FOR SHEAR CRITICAL REINFORCED CONCRETE BEAMS

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## **Abstract**

### **ABSTRACT:**

This paper presents an analytical study on the modeling of shear critical reinforced concrete beams modeled using the finite element method. The paper investigates two modeling strategies; the first of which is the well established smeared cracking modeling approach. Experimental test results from a wide range of beams tested by other researchers were used for model verification. This paper presents a mixed modeling approach in which the smeared cracking model was used in conjunction with discrete cracking planes to model the concrete continuums in an effort to reach a better correlation with the experimental data. This is achieved by introducing specific planes at the suspected planes of failure for shear critical beams. Analytical results have shown that the proposed modeling approach is capable of better simulation of the observed experimental response in terms of strength and stiffness, as well as capturing the post-peak response of the tested beams.

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