

EVALUATING AND PROPOSING PREDICTION MODELS OF SHEAR CRACK WIDTH IN CONCRETE BEAMS

Mohamed ZAKARIA, Dr. (South Valley University)

Tamon UEDA, Dr. (Hokkaido University)

Zhimin WU, Dr. (Dalian University of Technology)

The authors offer a comprehensive review of prediction models available in the literature for estimating shear crack width in reinforced and prestressed concrete members. Shear crack openings calculated by each model are compared with values obtained in seven experimental investigations to evaluate their accuracy, together with the effectiveness of the factors considered. Based on the results, new models for the prediction of shear crack spacing and width in reinforced and prestressed concrete beams are proposed. These models indicate that the shear cracking mechanism is different from that for tension/flexural cracking. The proposed models correlate better with all the test results than the other prediction models. They can predict both average and maximum shear crack width and are applicable to various loading histories, including fatigue loading.