

Applicability of existing crack controlling criteria for structures with large concrete cover thickness: Review.

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Abstract

Adverse effects from the cracks in Reinforced Concrete (RC) structures are controlled at the structural design stage. Cracks due to service load are controlled by limiting the ‘calculated crack width’ to a ‘maximum allowable crack width’. With the understanding of social and economic advantages of long design life structures, there is a trend of constructing structures up to 300 years of design life. To enhance durability, such structures require relatively large concrete cover thickness. The existing ‘crack width calculation models’, have to be validated before using on such large cover structures. The predictions of crack width calculation models in Eurocode 2, Model Code 2010, Japanese Code, American Code and British code were compared with the results of recent experiments with large cover specimens. It could identify that the aforementioned models have to be improved to predict the crack widths of large cover structures. The necessary improvements of each model have been identified. Next, a literature survey was conducted to check the applicability of the existing ‘allowable crack width limits’, for the structures with large concrete covers. To effectively use the existing allowable limits on such structures, the necessary improvements and future works have been identified considering the durability, aesthetic and tightness criteria.

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