

Prediction of Crack Width Due to Corrosion of PC Tendon in Prestressed Concrete Structures

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Abstract	Corrosion expansion of prestressed concrete (PC) tendon affects mainly crack width on surface of concrete. This paper simulates corrosion expansion of PC tendon in concrete. Elastic expansion model is utilized for growing of corrosive product as a result of oxidation reaction on reinforcement. In reality, corrosive product penetrate freely into concrete. In order to cover this behavior, elastic expansion is then enhanced its capability in numerical simulation. Furthermore the proposed model used an apparent expansion is adopted to predict width of corrosion crack. Laboratory test is conducted to verify numerical result. Single and multi PC tendons embedded in concrete attacked by corrosion is investigated. Finally, prediction of crack width on surface of concrete due to corrosion of multi layers of PC tendons in the real pretensioned PC girder are conducted using the proposed model. The results show that corrosion crack width of the proposed model meets the real pretensioned
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