

Experimental Research on the Moisture Behavior around a Crack of Concrete under Unsaturated Condition

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Abstract

It is necessary to identify the deterioration factors of reinforced concretes. It is well known that the water affects the durability of reinforced concrete buildings. Also, cracks transport deterioration factor easily such as water move into concrete through it. Therefore it is important to study water movement around cracks in a concrete. But few experiment researches have been made on how the water penetrates through cracks of the concrete under unsaturated condition. The purpose of this research is to measure water movement, especially around a crack the concretes under unsaturated condition at early time. Prepared specimens have a 0.05mm width crack of horizontal direction. Then, penetration tests are conducted and water behavior is investigated dynamically by neutron radiography. The results show that water movement in a crack decelerate dramatically in minutes. Also, water profiles in the concrete shift for a few minutes