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IN-SITU TESTING OF THE PERMEABILITY OF CONCRETE

Abstract:
Reinforced concrete is one of the most widely used structural materials, because it offers good durability properties, a range of engineering solutions and a variety of aesthetic opportunities. To obtain required properties of concrete as a structural material in the laboratory and on site is not the same. Placing, compacting and curing often have a greater influence on the durability than the composition of the concrete, which is the reason why the performance of concrete cannot be only determined on the basis of laboratory testing results. Real properties of material which is placed and cured on site in different environmental conditions stay unknown. From mentioned above it is obvious that there is a strong need for the application of the non-destructive methods in testing of concrete structures on site.

In this paper permeability properties of concrete are measured with the non-destructive methods. Methods included measuring of initial surface absorption and air permeability. Testing was performed with the two instruments developed at the Faculty of Civil Engineering in Zagreb, Croatia. Precast concrete elements and specimens casted during the production of elements are tested. Permeability properties were measured on the precast elements by the use of nondestructive test methods and on the specimens with the standard laboratory tests. Results from NDT methods and laboratory measurements are analyzed and compared, in order to evaluate the measurements techniques and the quality of the concrete.

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