

Investigation of effect of maximum aggregate size on properties of durability of normal concretes

Ebeahim Ghiasvand

Assistant Professor, Faculty of Engineering, Bu-Ali Sina University, Kaboodrahang, Hamedan, Iran

Abstract

Aggregates are the major constituents of concrete and typically occupy between 60% and 80% of the concrete volume. Properties of both fresh and hardened concrete are influenced by the quality of aggregates and yet their role is often overlooked. According to studies, the permeability of concrete is the most important parameter in its durability. Several factors is effective in concrete permeability such as water to cement ratio, content, shape and texture of aggregate, type and content of cement, etc. This paper examines the effect of changes of maximum aggregate size on the durability of properties of normal concrete (with $w/c = 0.55$). For this purpose, after preparing the aggregate (with maximum size aggregate 9.5, 12.5, 19 and 25 mm and similar fineness modulus) and concrete, experiments were carried out on concrete including compressive strength, sorptivity, absorption, ISAT, RCPT, and RCMT. The results show that generally with decrease in maximum aggregate size the compressive strength of concretes increases and improves the durability parameters.

Keywords:

Maximum size aggregate, Fineness modulus, Permeability, Durability

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