

Evaluating and comparing laboratory, regulatory and numerical methods for determining the creep in dense, light and ordinary concrete

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Abstract

Creep has a significant impact on the various issues of the reinforced concrete structure, and the creep-induced deformations are usually two dentures, equal to the instantaneous deformation of the concrete. Creep in concrete generally refers to the long-term deformation of the material under load and depends on various factors such as the type of concrete components, temperature, humidity and the amount of applied stress. The present study is an experimental, laboratory and numerical study on the creep and contraction behavior of high-strength concrete and other concrete, including conventional concrete and lightweight concrete. Change of time-dependent forms (creep) in laboratory samples with different compressive strengths under constant axial load And continuously evaluated under conditions of temperature and humidity. The modeling was done in ABAQUS software and the results were compared with laboratory values. According to the results of the study, the maximum difference rate for older concrete is that concrete specimens with lower compressive strength exhibit a lower difference between the theoretical and laboratory results.

Key words: creep, concrete, laboratory, ABAQUS

1. Introduction

Creep on issues various structures of concrete reinforced concrete have a significant effect; creep deformations are usually two dentures equal to the instantaneous deformation of concrete. Due to the importance of the problem of creep in concrete, the amount of concrete creep and the estimation of its behavior over time is essential. Creep in concrete generally refers to the long-term deformation of the material under loading, which is a complicated problem and depends on various factors such as the type of concrete components, temperature, humidity and the amount of applied stress.