

عنوان مقاله:

A Review on Plastic , Drying and Autogenous Shrinkage of Concrete

محل انتشار:

اولین کنفرانس بین المللی و سومین کنفرانس ملی سد و نیروگاههای برق آبی (سال: 1390)

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خلاصه مقاله:

Massive concrete structures such as dams, foundation slabs and bridge decks may be subject to a number of sources of reduction in volume of concrete which causes early age cracking. It could be thermal stresses, plastic and autogenous shrinkage-induced stresses. Examination of the causes of cracks in dam concrete has revealed that plastic shrinkage cracking results from the rapid evaporation of moisture due to hydration heat in the initial stage of hardening. In fact drying is a phenomenon that appears as plastic shrinkage at this stage. The drying shrinkage in concrete is assumed to be related mainly to the removal of adsorbed water from the hydrated cement paste. Autogenous volume deformation is also an important parameter for concrete's anticracking behaviors which occurring at constant temperature with no moisture transferring with the surrounding environment. This deformation starts simultaneously with the hydration of cement, by the beginning of the mix process. It has been tried to present a review about plastic, drying and autogenous shrinkage which are important kinds of shrinkage in mass concrete. The mechanism, factors and precautions of these shrinkages are also discussed.

کلمات کلیدی:

Autogenous shrinkage, plastic shrinkage, drying shrinkage, volume deformation, early ages

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