Title: Waterproof performance of concrete: A critical review on implemented approaches

Author/Authors: Nasiru Zakari Muhammad, Ali Keyvanfar, Muhd. Zaimi Abd. Majid, Arezou Shafaghat, Jahangir Mirza

Abstract: Permeation of water and other fluids in concrete can result in degradation and other aesthetic problems which shorten concrete structures' life. Several studies have been undertaken to produce waterproofing additives that extend the service life of concrete elements. Consequently, a great deal of repair and maintenance costs could be avoided. This paper aims to review the studies which have used various agents and tests to evaluate the waterproofing efficiency of concrete. The study establishes the taxonomy and construct of research in concrete waterproofing research. Study established frequency aggregation of different additive used and tests applied. The technique adopted by majority of the researchers was the use of surface coating. Water absorption was found to be the most common test in this research area. Study delineated that most researchers focused on the use of polymer-based materials, silicates containing compound, silanes, siloxanes, cementing materials and some nano materials. Finally, study established three classification of additives based on material structure, method of application and additives functions.