

## DURABILITY OF THE CONCRETE AND ITS DESIGN LIFE

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**Rezumat.** Anul 2023 este cu totul deosebit sub aspectul revizuirii prevederilor naționale obligatorii privind proiectarea durabilității, producerea și punerea în operă a betonului uzual, monolit și prefabricat. Cu caracter obligatoriu, în 16 februarie a.c. au intrat în vigoare NE 012/2:2022 și SR EN 13670:2010 iar începând cu 19 aprilie a.c. NE 012/1:2022 împreună cu SR EN 206+A2:2021. În acest articol se prezintă pe scurt subiectul proiectării durabilității betonului cu referire directă la duratele de viață tehnic reglementate legal prin Eurocodul 0 și Codul CR 0/2012 și cu trimitere către specificitatea lucrărilor de artă din domeniul transporturilor feroviare și rutiere.

**Abstract.** The year 2023 is quite special in terms of the revision of the mandator national provisions regarding the durability design, production and execution of concrete works. Starting with February 16, NE 012/2:2022 and SR EN 13670:2010 entered into force and NE 012/1:2022 together with SR EN 206+A2:2021 also, on April 19. This article briefly presents the subject of concrete durability with direct reference to the design life legally regulated by Eurocode 0 and CR 0/2012 National Code, taken into consideration the specificity of works of art (eg. bridges) in the field of rail and road transport.

**Keywords:** concrete, durability, service life, performance approach

### 1. Introduction

Concrete, correctly designed from a structural and durability point of view, by its physical-mechanical and chemical characteristics, by the low cost of the raw materials as well as by the favorable, specific way in which it responds to the environmental aggressions to which it is subjected during its working (service) life, represents the most effective technical-economic solution for many applications in the field of constructions.

### 2. History and transition

A series of books - e.g. [7, 8] - published shortly after the recent major earthquakes (1940, 1977) present a rather grim reality, namely that the designers and constructors of the old and heavily affected works were not concerned with ensuring durability, simply presence of concrete (of low strength class, most of the time) representing "a certification" that the structure will be resistant, stable and durable, for a long, unspecified time. The serious problems caused by major

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