

RAV13N2, May – August 2023

*Message from the Editor in Chief*

**JOURNAL OF THE LATIN AMERICAN  
ASSOCIATION OF QUALITY CONTROL,  
PATHOLOGY AND RECOVERY OF  
CONSTRUCTION**

<http://www.revistaalconpat.org>

With great satisfaction, we present the second issue of the thirteenth year of the ALCONPAT Journal.

The objective of the Journal is the publication of contributions on basic or applied research directly related to solving problems about quality control, pathology and recovery of constructions, with related case studies being welcome in these areas.

This V13N2 edition begins with a work from **Mexico**, where Alejandro Meza and colleagues evaluate the effect of experimental variables in the study of chloride degradation of steel fiber reinforced concrete (SFRCs). The information was collected from different literary sources to later be treated through Taguchi's experimental design and regression analysis. The results show that the most influential factors in the degradation of SFRCs degraded by chloride are the load during degradation and the crack width, factors that statistically impact on residual resistance and maximum flexural load. However, others such as the water/cement ratio, fiber volume, chloride concentration and degradation time showed little influence on the mechanical response of the SFRCs.

In the second work, from **Mexico**, Marco Antonio Navarrete-Seras and colleagues analyze the influence of the proportion of sand in Type II mortars according to standard N-CMT-2-01-004/02 using three types of aggregates from the region of Morelia, Michoacán, determining its influence on its physical-mechanical properties, contemplating the use of different cementing materials (MC): Portland cement plus lime (B1) and Portland cement plus masonry cement (B2). Mixtures for B1 and B2 were prepared with sand/MC volume ratios, from 2.25 to 4, determining fluidity, uniaxial compression resistance (UCS) and wet electrical resistivity (WER). The relationship between fluidity and the amount of water/MC was studied, concluding that the type of aggregate and proportions modify the fluidity and demand for fresh water, impacting on UCS and WER.

The third work in this issue is from **Brazil**, where Rafael P. Gurkewicz and colleagues study the water absorption capacity of concrete panels and their self-healing process by adding an additive to the concrete or applying it on the surface. Through permeability, water absorption by immersion and capillarity tests, after wet curing, the panels with crystallizing additive applied on the surface showed lower absorption capacity, followed by those without additive and those with incorporated additive, which showed higher absorption. Through microscopy, it was possible to observe that the crystallization of the panels with surface additive was more advanced compared to those with incorporated additive.

The induced cracks did not reach the complete filling of the pores after curing in both types of application.

In the fourth article from **Mexico**, Arnulfo Luévanos Rojas shows a new model for the complete design of isolated rectangular footings under uniaxial and biaxial bending, considering that the area of the footing in contact with the ground works partially in compression. The methodology is presented by integration to obtain moments, bending shears and penetration. Numerical examples are presented for the design of isolated rectangular footings under uniaxial and biaxial flexure and are compared to the current model (total area works in compression) in terms of volumes of concrete and steel. The current model shows higher volumes of concrete and steel. Therefore, the new model is the most appropriate, since it presents better quality control in the resources used.

The fifth article, by Marian Diniz and R. Melo, comes from **Brazil** and analyzes the correlation between the pavement condition index and the condition of two surface drainage elements: storm drains and gutters. The study was carried out from the analysis of 19 sections, distributed throughout the Tambaú neighborhood, in João Pessoa-PB. The calculation of the state of the pavements was carried out by the PCI method and the state of the drainage elements was verified through subjective analysis. The results of the investigation showed when the elements fit or not in the ideal conditions, and although the drainage elements are considered in the performance of the pavement, the statistical evaluation showed a weak correlation between the condition of the pavement and the drainage elements evaluated.

The sixth work of this issue was written by Michel Donadio and colleagues from **Switzerland and Mexico**, in which they make a documentary analysis of the different corrosion mitigation techniques currently available, such as repair mortars, active and passive corrosion inhibitors, corrosion, protective coatings and induced current or galvanic cathodic protection. These structures, built to last a long time, are subject to aging due to influences from their environment, such as water, atmospheric carbon dioxide and other harmful elements such as chlorides and pollution. The most common deterioration process in reinforced concrete structures is corrosion and the consequent expansion of the steel reinforcement, which causes cracking and spalling of the concrete.

The article that closes the issue is by Patricia Angulo and Carlos Ochoa from **Mexico**, who identify and discuss the most eco-efficient sustainable strategies to take advantage of or reduce NO<sub>x</sub>, SO<sub>x</sub> and SiO<sub>2</sub> dust emissions in cement manufacturing, with the aim of improving competitiveness in the Mexican cement industry. The research design was qualitative, observational and deductive. The results showed that SO<sub>x</sub> waste bioreactors have higher eco-efficiency; followed by the domes to capture and take advantage of the SiO<sub>2</sub> and the bag filters. These strategies are effective for specific pollutants from cement production. This study investigates a topic that is rarely addressed in Mexico, the sustainability of cement. By applying these strategies, the Mexican cement sector would boost its business competitiveness.

We are sure that the articles in this issue will constitute an important reference for those readers involved with questions of evaluation and characterization of materials, elements and structures. We thank the authors participating in this issue for their willingness and effort to present quality articles and meet the established deadlines.

We invite you to collaborate by submitting articles for our next special issue (RA V13 N3): “Combined binders for sustainable and durable concrete”, where Dr. Ravindra Gettu (India) and Dr. Yuvaraj Dhandapani (England) will be the Guest Editors.

At the close of the last V13 N1 2023 issue, 12 years after having started operations, our performance as Alconpat Journal was finally rewarded with our inclusion in one of the two best indexes for journals such as Elsevier's Scopus. Our Scopus membership has its historic beginning on December 29, 2022, the date on which we received approval from Elsevier. This is one more reason of celebration for our community that has made a scientific investment in our journal waiting for moments like this. Congratulations to all.

On behalf of the Editorial Board

A handwritten signature in black ink, appearing to read 'Pedro Castro Borges', written over a circular stamp or seal.

Pedro Castro Borges

Editor in Chief