

Message from the Editor in Chief

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

<http://www.revistaalconpat.org>

It is a source of satisfaction and joy for the ALCONPAT Journal team to see the third issue of our fifteenth year published.

The objective of the Revista ALCONPAT (RA) is the publication of citable production (basic or applied research, and reviews), documentary research and case studies, related to the themes of our association, i.e. quality control, pathology and recovery of constructions.

This issue V1 N3, starts with a paper from **Mexico**, where Luis Enrique Fernández-Baqueiro and colleagues study the cracking process of autoclaved aerated concrete (AAC) units and masonry wallets with discrete crack models of the Finite Element Method. The results of an experimental study were analyzed to develop computational models. Models of the splitting tensile strength tests of units and the diagonal tensile strength test of masonry wallets, of different sizes, were developed. Rankine and Mohr failure criteria were considered for the interface elements. The cracking loads were determined. It was concluded that, with the developed models, the cracking loads and the failure mechanism of AAC units and wallets are well simulated compared to what was observed experimentally.

In the second article, Carlos Alberto Torres Montes de Oca and José Eduardo Rosas Valencia from Mexico, analyze the behavior of the bell towers of a historical temple built with irregular masonry. It is analyzed by means of a finite element model of shell types and turning blocks. The results showed a coherent relationship of the behavior with respect to section changes. Differential subsidence drastically increased the displacements. One limitation was the interruption of access, due to intervention activities in the building. The uniqueness of this work is based on the graphic superposition of the displacements calculated for different combinations of isolated and combined actions. In conclusion, the displacements obtained with time signals are less critical than those determined with response spectrum.

The third work in this issue is from **Mexico**, where Jorge Xilotl-Domínguez and colleagues aims to reduce the weight and enhance the thermal performance of Ultra-High-Performance Concrete (UHPC) for architectural applications while maintaining adequate mechanical strength. To achieve this, expanded polystyrene perlite (EPP) was used to replace limestone sand by mass (0, 30, 55, 80, and 100%) and synthetic Polyvinyl Alcohol (PVA) structural fiber was added. The mixes were evaluated for compressive and flexural strength, surface and bulk electrical resistivity, and thermal conductivity. Results showed

that EPP significantly reduced density and thermal conductivity, while PVA improved strength. However, high EPP contents decreased mechanical performance. The combination of EPP and PVA in UHPC is innovative. It was concluded that optimized mixtures can balance thermal efficiency and structural integrity for architectural uses.

The fourth article, by Lucio Guillermo López-Yépez and colleagues, comes from **Mexico**. In this study, specimens were tested under sustained axial compression loads to obtain their short-term creep behavior, i.e., over a period of one hour. The specimens were subjected to various loads (20%, 50%, and 80% of their capacity) at various ages (7, 28, and 90 days), recording the longitudinal and transverse strain over time. Subsequently, the specimens were tested to failure, obtaining the stress-strain curve, compressive strength, and modulus of elasticity. It was found that the specimens subjected to 20% load showed a slight increase in capacity and modulus of elasticity, while those subjected to 50% and 80% loads showed a decrease in capacity and modulus of elasticity for all ages.

The fifth paper is from **Nicaragua** by Eddisson Francisco Hernandez and colleagues. They evaluate the performance of artisanal and semi-industrial blocks, used to make prisms and walls, under vertical and diagonal stresses necessary to determine the structural vulnerability of buildings to seismic hazards. Concrete block masonry constructions are commonly used in the Pacific region of Nicaragua, mainly in housing projects. In 2017, the Ministry of Transportation and Infrastructure published the "Minimum Standard for Design and Construction of Masonry MP-001", as a complement to the National Construction Regulations. However, this standard does not consider the characteristics and properties of local materials. Concrete blocks prisms and walls were elaborated, and failure types and mechanical performance at later ages were determined. The results showed a tendency to diagonal stress failures in walls, with an average strength (V_m) of 6.7 kg/cm², higher than those reported in the literature.

The sixth work is by Carlos Alberto Torres Montes de Oca and colleagues from **Mexico**. The objective of this research was to simulate, by means of virtual modeling, the recovery of the distortional stability of a reinforced concrete building by means of composite and contact beams. The methodological procedure is based on previous studies such as pathological auscultation, concrete coring, sclerometry, environmental vibration tests, soil mechanics and generation of mathematical models. The analyses and studies are carried out in accordance with national and international standards. The model representing the current state of the structure was numerically calibrated. The results indicate that by using composite section beams for the reinforcement of the system, greater stiffness is obtained in the superstructure if compared to contact beams.

The seventh is from **Brazil** by Cristiano Corrêa and colleagues. They provide a prognosis of the survival conditions of victims of a fire in a dormitory in a residential building, using the Fire Dynamics Simulator-FDS computer program. Based on a contextualization of deaths caused by fire in the world and in Brazil, most deaths occur in residential environments. Given the preventive gap in these environments, lethal concentrations of carbon monoxide and dioxide were analyzed, as well as the temperature and minimum oxygen concentration. The maximum time that occupants of the dormitory would remain in the four positions was estimated, considering people with mobility difficulties. It was found that the environment becomes lethal in a maximum of 8 minutes after the fire, in the positions studied.

The article that closes the issue is by Leonardo Silva Araujo and Elie Chahdan Mounzer from **Brazil**, who investigate the influence of an extremely aggressive atmosphere on the metallic structures and equipment of a platform undergoing decommissioning. The methodology included bibliographical research, data collection on accidents caused by corrosion; prior selection of sites; visual inspection; and curation of the data collected. The results showed severe damage to structures, equipment and accessories caused by the intense aggressiveness of the environment. The limitations involved access to information on accidents and incidents related to corrosive processes in this environment. This work is original because it covers the effects of an extremely aggressive atmosphere in the studied environment. The conclusion is that corrosion on platforms in such conditions poses serious risks of structural collapse, as well as potential harm to workers and the environment.

We are confident that the articles on this issue will be an important reference for those readers involved in issues of evaluation and characterization of materials, elements and structures. We thank the authors participating in this issue for their willingness and effort to submit quality articles and meet the established deadlines.

Fifteen years after starting 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. We already have a modest cite score (0.6), which I am sure will increase thanks to you, our readers, and the quality of our articles. Our membership in Scopus has its historic beginning on December 29, 2022, the date on which we received approval from Elsevier. We hope during 2026 to apply to Journal Citation Reports, which is the index with the highest international coverage and quality. I also want to share with you that we were accepted, after rigorous evaluations and corrections to our operation, in the Dialnet index, which, according to information provided by them, is the prelude that could guarantee a positive evaluation in JCR. We will see in the coming months if this is fulfilled. In the meantime, we invite you to read us, and if your

reading was useful in your work, please do not forget to cite us. The 15th anniversary of our journal will also be celebrated at the Eduardo Torroja Institute on the occasion of CONPAT 2025 from September 24 to 26. Similarly, with an extraordinary issue dedicated to critical Reviews, which we hope you will like, and which will come to light before the end of the year. These are reasons for celebration for our community that has made a scientific investment in our journal waiting for moments like this. Congratulations to all.

By the Editorial Board



Pedro Castro Borges
Editor in Chief