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Message from the Editor in Chief

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CONSTRUCTION**

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With great satisfaction, we present the second issue of the twelfth 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 V12N2 edition begins with a work from **Brazil**, where E. L. Machado and colleagues identify what criteria should be considered in the evaluation of school buildings, through a systematic review of the literature, consultation of government regulations and guidelines, and consultation with experts. The research was carried out in 3 stages: 1) systematic review of the literature and 2) review of national standards and guidelines to identify criteria and 3) weighting of criteria, by applying the Delphi method. 70 evaluation criteria were identified, which were grouped into 11 categories and weighted by consulting experts. The identification of criteria, as presented in this research, aims to contribute to the development of evaluation techniques and methods, to subsequently write a performance standard for school buildings.

In the second work, from **Mexico**, A. Moreno and colleagues make a review of the work done using marble powder as a substitute for cement, sand or fine aggregate in concrete, mortar and bricks. Research carried out in various parts of the world with different experimental procedures was reviewed. It is concluded that marble powder can be used as a partial substitute for cement or fine aggregate (up to 15%, depending on the material to be replaced), without affecting the compressive strength of the samples or pieces, and regardless of the shape. Therefore, marble dust not only helps to reduce the pollution it generates, but also to reduce its use as sand and dust, contributing to sustainable development.

The third work in this issue is from **Brazil**, where F. G. S. Ferreira and colleagues evaluate the impact of thermal curing and the use of particle packing in ultra-high performance cementitious composites (UHPC), with and without glass powder. For this, the specimens were molded with 0% and 50% glass powder (volumetric replacement for cement), in addition to two mixtures obtained through particle packing. The samples were subjected to thermal curing and moist curing to compare the effects. Tests of resistance to compression and absorption by capillarity were carried out. The results indicated that thermal curing provides a gain in initial strength. The application of particle packing in the mixing doses resulted in a significant improvement in the properties of the samples and the glass powder proved to be a viable substitute for cement.

In the fourth article from **Brazil**, R. R. C. Silva and C. Bertoldo simulate pathological manifestations in diaphragm walls through concrete made with different additions of synthetic polymer, proposing to obtain resistance and stiffness prediction models through the propagation of ultrasound waves. Compression tests were carried out to determine resistance and stiffness, as well as ultrasound tests by the direct and indirect method on concrete produced with different concentrations of synthetic polymer. The results obtained indicated a decrease in the mechanical and acoustic properties of the concrete with the increase in the concentration of synthetic polymer in its preparation. The models generated by the ultrasonic test were statistically significant, with a confidence level of 95%, and the correlations established in particular can be used in the detection of pathological manifestations in loco.

The fifth article, by R. Cattelan and colleagues, comes from **Brazil**, and they evaluate the influence of the eccentricity variations of the cables in models with post-tensioned flat slabs. The correct positioning of the tendons in the assembly of post-tensioned flat slabs is essential for the structural system to achieve adequate performance and safety. Four different architectural models with modification of the height of the cables at different points and quantity were analyzed. Pre-compression stresses, extreme stresses at the top and bottom, vertical displacements, load balancing and amount of passive steel in the slabs were evaluated. The ADAPT Floor Pro software was used for the analysis. The project follows the recommendations of NBR 6118:2014 and ACI 318:2019. For the evaluated models, it was found that the variation in the vertical eccentricity of the tendons at the base of the slab further reduces the values of the applied stresses, compared to the variation at the top.

The sixth work of this issue was written by Elia Alonso and colleagues from **Mexico**, in which they analyzed modifications presented by different stabilizers (lime, cement, prickly pear fiber, river lithics, volcanic lithics, sodium sulfate and gypsum) in properties and failure envelope of a remodeled natural clayey soil from Santiago Undameo, in Michoacán, Mexico. Granulometry, hydrometry, index tests, simple compression and Proctor test were performed on the clay soil. The variation in index and failure envelope properties was determined for the stabilized mixtures. The proposed additions improve the behavior of the highly plastic soil, reducing volumetric deformations and increasing its normal mechanical strength, shear strength and internal friction angle. The research contributes favorably to the restoration of historic-heritage earthen constructions, civil works, pathologies in buildings and construction technologies. The research was carried out in a laboratory under international regulations.

In the seventh paper, from **Brazil**, Ana Lin Ramos and Elton Bauer study the conditions of exposure to degrading agents in buildings located in different Brazilian bioclimatic zones. Knowing the action of weathering is essential to understand the degradation of facades. For this, eight cities were selected: Curitiba, Santa María, Florianópolis, Brasília, Niterói, Goiânia, Picos and Belém. A hygrothermal simulation construction model was defined to evaluate total radiation, thermal amplitude, thermal shock, temperature intensity

index and directed rainfall. As a result, critical condition zones are identified, providing exposure classifications. For agents of temperature and directed rain, the most exposed areas are Goiânia and Belém. The mildest exposure zones are Belém for temperature agent and Niterói for directed rain.

The eighth work is a case study from **Cuba**, where Alberto Hernández Oroza and colleagues make an evaluation through visual classification and non-destructive tests, the state of conservation of 32 wooden beams for reuse in the building restoration project. Narciso López of the Historic Center of Havana. For this, measurements of the moisture content, penetrometer, estimation of the modulus of elasticity and breaking stress by ultrasonic pulse velocity were made. The results showed that 66% of the beams were affected by rot, defibrillation and cracking. The tests carried out on the deteriorated beams made it possible to determine that, for a reliability of 95%, of the remaining 21 beams it was possible to reuse 17 of them with an average density of 0.4 g/cm³.

The ninth work in this number comes from **Brazil**. In this case study, G. Coni and colleagues present the study carried out in a Wastewater Pumping Station after severe degradation was observed. Biogenic sulfuric acid attack on sewage systems is widely studied in the literature, however, data on real construction situations are still quite limited. Analyses of H₂S concentration in air, carbonation depth, compressive strength test, petrography, SEM/EDS, XRD and chemical determinations were performed on concrete cores extracted above the effluent level. Products identified on the surface were gypsum, jarosite, ferrous hydroxide, ferrous chloride, and possibly hisingerite. The results demonstrate the presence on the surface of both cement paste dissolution products and 16 mm steel bars located in the attacked region.

The tenth article that closes the edition was written by Alberto Hernández Oroza and colleagues from **Cuba**, who diagnose and propose a solution to the injuries present in the wooden floors of the Santa Clara Convent. To this end, non-destructive resistography and penetrometer tests, biological studies on the wood, and geomatic techniques for analysis of deformation and dimensioning of the beams were applied. The results of the diagnosis showed that 65% of the slab composed of 98 beams is affected by rot and xylophagous organisms. Density studies by comparison with reference values showed loss in wood hardness. The results conclude that the restoration implies the need to replace 17 beams, and the reinforcement of the right feet and sections of sliding beams.

It is important to mention that the ONCyTS of Brazil and Mexico have kept Revista Alconpat in their indexes of Quality Scientific Journals. In particular, in Mexico, the Alconpat Journal has been consolidated at an international level and the National System of Researchers (SNI) already considers it as a valid product for the promotion and permanence of its members. This has been a great achievement, the product of everyone's efforts, authors, reviewers and editorial committee. Similarly, it is important to mention that Revista Alconpat already belongs to the Directory of Open Access Journals (DOAJ), which is a definitive step to apply to new indexes. Alconpat is also making a significant financial investment so that all its issues are being marked in XML-Jats so that it can be evaluated in

more prestigious indexes. Congratulations and our thanks to all.

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.

On behalf of the Editorial Board

Pedro Castro Borges

Editor in Chief