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## Journal of the Latin-American association of quality control, pathology and recovery of construction

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Message from the Editor in Chief

<http://www.revistaalconpat.org>

We present the third issue of the ninth year of the ALCONPAT journal with great satisfaction.

The aim of the journal is to publish case studies within the scope of the Association, namely quality control, pathology and recovery of constructions, including basic and applied research, reviews and documentary research.

This V9N3 issue begins with a work from Mexico, where Jorge Uruchurtu Chavarrín et. al. evaluated the effect of the Nopal mucilage on the electrochemical properties of concrete. Three concentrations of this additive were designed with a Nopal-water ratio of 1: 1, 1: 2 and 1: 3. Compression tests were performed after 28 days of curing. The samples were evaluated for 270 days through various electrochemical techniques such as: open circuit potential (OCP), electrochemical noise (EN) and linear polarization resistance (LPR). Their results indicated a decrease in compressive strength with an increase in mucilage concentration. The onset of steel corrosion was delayed, and the corrosion rate was lower for samples with Nopal mucilage. The preservation of this additive can be a challenge to analyze, but its use has a great impact on concrete and the environment.

In the second work, from Brasil, Mateus Henrique de Souza and Rafael Alves de Souza developed and analyzed polymeric repair mortars composed of vinyl copolymer, PVA (polyvinyl acetate) and SBR (styrene-butadiene). They performed tests for the determination of compression and tensile strengths by diametral compression. In addition, they determined the adherent strength between the repair and the concrete by means of a tensile test by diametral compression. Among the materials tested, it was noted that the material modified by SBR had the best performance, especially in relation to adhesion to concrete. In general, the results showed that the studied mortars modified by the polymers can meet the function of repair material.

The third work of this issue is from México, where R. Visairo-Méndez et. al. determined whether the durability index is affected by three sizes of specimens evaluated for repair mortar. They made 5 x 5 cm cubes, 5 x 10 cm and 10 x 20 cm cylinders for each type of mortar. They found that certain indices (WER, TVC and CS) do not depend on the geometry of the specimen. However, the UPV results showed a difference between cubes and cylinders of 10 x 20 cm greater than 17.5%. The results of  $\epsilon_{eff}$  presented a very interesting difference between the cubes and the 5 x 10 cm cylinders. The authors recommended restricting the height of specimens to a standard value.

In the fourth article, from Brasil, Fernando Júnior Resende Mascarenhas and Roberto Chust Carvalho analyzed the fatigue service life of the longitudinal reinforcement in reinforced concrete bridge beams considering the real number of heavy vehicles with 2 to 6 axles on a road section in the state of São Paulo, Brazil. They used theoretical models in a structural system of bridges with two beams doubly supported in sections of 10, 15 and 20 meters. For the determination of the efforts they used the Ftool software and in the estimation of the service life to fatigue the accumulated damage. At the end, it was verified that the lifetime

to fatigue of the longitudinal reinforcement varies according to the size of the section, being that in the three analyzed bridges the service life to fatigue is less than 30 years.

The fifth work, by Francisco Roger Carneiro Ribeiro et. al, from Brazil present an application of the methodology of the GUT Matrix (Gravity, Urgency, Tendency) in the analysis of the pathological manifestations in buildings, having as examples three historical constructions of the historical center of Sobral, Ceará, Brazil. The investigation was conducted with on-site inspections, photographic registration, mapping of damages and application of the method. The results generated the priority graphs that represent the order for the treatment of each damage in each building. It was possible to conclude that the applied method can be used as an important building maintenance management tool through the prioritization of resolution of the most serious problems, and directly contributes to the preservation and security of historical heritage.

The sixth work in this issue is written by Alberto Hernández Oroza and Rafael González Hernández from Cuba, who make a diagnosis of the deterioration of a reinforced concrete building located in Old Havana, Cuba, built in 1906. Due to the years of exploitation and lack of maintenance, the property presents concrete detachments and cracks in almost all structural elements. To evaluate the service life, they carried out studies of apparent resistivity of concrete, chemical tests to quantify the levels of free chloride and sulfate, potential tests, sectional losses of the bars, extractions of concrete specimens and visual analysis of the present lesions. The obtained results showed that although the property shows an advanced deterioration, it can be rehabilitated being possible to extend its service life.

The article that closes this edition is from Brazil, where Lara Monalisa Alves dos Santos et. al., present the characteristics and evaluation of a roof system of one of the buildings of the University of Brasília - DF. They analyzed the main anomalies in the roof systems and systematized the intervention priority, with the purpose of correlating it with the corrective measures. The limiting factors for the inspection of the structures were accessibility, as well as the lack of intervention projects. The results obtained indicated that the main anomalies found in the systems are related to the lack of maintenance. The study also brings, as a contribution, indications and technical recommendations for the resolution of situations.

We are confident that the articles in this issue will constitute an important reference for those readers involved with questions of evaluations and characterizations 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 times.

On behalf of the Editorial Board