



Analysis of the Pathological Manifestations of the Casa Grande Foundation – Memorial of the Kariri Man in Nova Olinda – Ceará

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Abstract: The Casa Grande Foundation – Kariri Man Memorial is a non-governmental institution located in the city of Nova Olinda – Ceará, with about 15,000 inhabitants. This institution is a provider of education, culture and tourism for children and adolescents. The building consists of a museum, educandário and the theater Violeta Arraes – Engenho de Artes Cênicas. With this, a study was carried out that aims to point out the main pathological manifestations so that correct interventions are carried out according to the level of criticality. For this purpose, theoretical and physical materials were used to obtain the results and it can be concluded that this heritage needs preventive and corrective maintenance to continue transmitting its historical and cultural legacy.

1. Introduction

Humanity has accumulated a wide variety of scientific knowledge over time, which has led to the development of many construction-related technologies, such as materials and techniques, as well as the design and mathematical calculation of structures. These technologies have evolved throughout civilization to meet the needs of people, promoting greater safety, comfort and convenience (SILVA and JANOV, 2016).

As technology advances, the construction of large buildings in cities is happening more and more. The use of industrial models in civil construction began with the need to be more productive and made the processes be done faster. Nevertheless, the high need to achieve higher productivity has made it more common for construction companies to neglect the correct execution of construction techniques. (QUEIROZ *et al*, 2021).

According to Bezerra (2018), in his careful research on the origin of pathological manifestations in Brazil, he points out that most of the problems detected could have been avoided if the theoretical concepts of engineering had been applied. This study shows that there is a difference between what is designed and what is executed; generating a decrease in the useful life of the

building.

A building cannot be repaired, restored or maintained unless the work is done correctly and carefully. The services must be performed with strict guidelines, after a careful diagnosis of the current damage to the building. The diagnosis has to identify the reasons for the pathological manifestations of the building, so that the correct improvements can be defined (MEIRA, 2001).

The Casa Grande Foundation – Kariri Man Memorial is a Non- Governmental Organization, located in the City of Nova Olinda, extreme south of the State of Ceará – with about 15,000 inhabitants – and houses: museum, FM radio, lodgings, theater, children's playground, DVDteca, comic book collection exhibition, homestay and restaurant and the Institute of Archaeology of Cariri. It works with the support of the State and national and international partners (NORONHA, 2008).

Figure 01 records the main façade of the foundation, where there is the square of the museum of the Kariris Indians.



Figure 1 - Author, 2022

Figure 02 records the façade of the educandário – building that makes up the Foundation.



Figure 2 - Author, 2022

Knowing the importance of building for the region, how to develop a diagnosis on the causes of the appearance of pathological manifestations?

This research aims to elaborate a survey of the manifestations existing pathologies at Fundação

Casa Grande - Memorial do Homem Kariri, with the objective of listing, presenting and classifying existing anomalies, pointing to possible solutions for prevention and thus increasing its useful life, in addition to contributing so much to the awareness of professionals in the area and the general population about the importance of maintenance periodic and preventive.

2. Theoretical Framework

Pathology is a science that studies the origin, symptoms and nature of diseases, in engineering it is the study of anomalies that have deteriorated, devalue buildings and can expose residents to risk situations (DEUTSCH, 2013).

There is a divergence between the concepts of pathology and pathological manifestation, where the first is the science that studies and explains the mechanisms and causes and the second, is the result of degradation, error or constructive vice (OLIVEIRA, 2012). For example, cracking is not a pathology, but a pathological manifestation;

Peter *et al.* (2002) states that the pathological manifestations are diverse and vary according to the construction system, which can be: electrical, hydraulic, masonry of sealing and structural, structural elements in reinforced concrete, firefighting installations, waterproofing, among others. Pathological manifestations are classified according to their origins, which are:

1. Constructive: It is developed from the moment of execution, by unskilled labor, materials unsuitable for that use or of low quality.
2. Acquired: They occur by the exposure of the building, being a result of the aggressiveness of the environment or incorrect installations and that damage the environment.
3. Congenital: Originated by errors or omissions of professionals and non-compliance with technical standards.
4. Accidental: Identified as atypical activities that mechanically damage the building.

In Brazil, there is no culture of preventive maintenance in buildings, these are done in predetermined periods even when there are no apparent anomalies. These deadlines are stipulated by the Manual of Use and Maintenance of buildings, which are required by the law in force in the country (DEUTSCH, 2013).

When preventive maintenance is carried out efficiently, it results in a financial benefit for the owner, increasing the safety of the building (MARCELLI, 2007).

Corrective maintenance is given by the need to correct one or several problems, such maintenance has a greater burden and can generate great discomfort and unhealthy environments (DEUTSCH, 2013).

3. Methodology

A survey of the pathological manifestations of the Casa Grande Foundation – Kariri Man Memorial was elaborated, in order to list, present and classify the existing anomalies of greater relevance.

A case study was carried out, as it requires a series of skills from the researcher, such as the ability to develop initial information and be flexible; fully understand the problem being studied, always being careful with preconceived information, so that it does not modify the final result. (BOGDAN, 2003).

The method used in the study is qualitative insofar as it allows to determine and explore all the pathological manifestations of the environments. The concept of qualitative research consists of five basic characteristics that make up such research: natural environment, descriptive data, focus on process, focus on meaning and inductive analytical process. (YIN, 2001).

3.1 Field of study

The Casa Grande Foundation – Kariri Man Memorial was divided as follows for better development of the study:

1. Museum: Kariri Man Museum, restaurant, living area, square, playground, FM radio and TV Casa Grande.
2. Educandário: DVDteca, gibiteca and Instituto de Arqueologia do Cariri.
3. Teatro Violeta Arraes – Engenho de Artes Cênicas: Theater, bathrooms and square Pierre Gervaiseau.

3.2 Study development

Lack of repair and maintenance can lead to the degradation of the historical heritage, jeopardising its integrity and thus losing its identity and history. In addition, a lack of repairs can harm public health and safety, as structures can become unstable and dangerous.

The restoration of heritage assets must be carried out by professionals with qualification and experience in the restoration and protection of cultural heritage. The aim was to maintain the original character of the building while preserving its authenticity and historical value.

In general, the restoration process may include assessing the state of conservation of the work, determining the materials used and techniques used in its construction, conducting tests to determine the compatibility of new materials with the original, removing layers of dirt and damaged elements that may compromise the integrity of the work Integrity, reintegration of color through the application of specific treatments for stabilization and repair of deteriorated areas and which have lost their original colour or brightness, and other endeavors.

In figure 3, Environment with important objects for archaeology without having a fire extinguisher nearby:



Figure 3 – Archeology room

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
EDUCANDÁRIO	LACK OF EXTINGUISHER	CRÍTICAL

Relevant presence of termites performing the degradation of the mainwood:



Figure 4 - Roof of the Hall of the Sacred Heart of Jesus

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
MUSEU	PRESENCE OF AGENTS BIOLOGICAL	CRÍTICAL

In figure 5, Floor of the museum suffering a sinking, generating an unevenness and risk of falls:



Figure 5 - Floor of the Blue House

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
MUSEUM	FLOOR UNEVENNESS	MÉDIUM

In the figure below, Bathroom adapted without having the attendances to the Technical Standard:



Figure 6 – Theater Bathroom

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
THEATRE	Not attending to ABNT NBR 9050:2020	CRÍTICAL

Fire extinguishers out of validity, which may cause possible failures at the time of use:



Figure 7 - Extinguisher present inside the Theater



Figure 8 – Extinguisher

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
THEATRE/ EDUCANDÁRIO	EXTINGUISHER OUT OF DATE, WITHOUT THE MAINTENANCE RING.	CRÍTICAL

In figure 9, lack of identification of electrical panel:



Figure 9 - Electric Theater Board

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
THEATRE	LACK OF IDENTIFICATION AND ORGANISATION OF CIRCUITS	CRÍTICAL

Air conditioning installed improperly, which may cause possible risks of electrical accidents



Figure 10 - Educandário air conditioning

LOCAL	PATHOLOGICAL MANIFESTATION	DEGREE OF RISK
EDUCANDÁRIO	AIR CONDITIONING PLUG CONNECTION	CRÍTICAL

Based on the photographic records made after the on-site inspection, we identified some pathological manifestations that we judge as critical because they are related to the exposure of visitors to possible risks.

4. Conclusion

The Casa Grande Foundation – Kariri Man Memorial – is, in general, an institution that provides education, culture and development for children and adolescents, as well as encouraging the local economy by attracting tourists and visitors.

The Foundation needs preventive and corrective maintenance in order to conserve and preserve, not only the building, but the continuous process of teaching and encouraging culture.

The restoration in the construction of this historical heritage is of extreme importance to preserve the historical culture of a society because the historical heritage itself is the evidence of the history and evolution of a society, and its preservation is essential to preserve the collective memory.

Ideally, a Building Inspection Report should be carried out so that the qualified and specialized Civil Engineer specifies the points of greatest criticality, and the interventions are carried out by the level of severity, urgency and greater tendency of aggravation. Therefore, in addition to promoting cultural tourism and generating economic opportunities for the region, investing in the preservation and recovery of historical heritage is a way to preserve the history and culture of a society. It is important that public and private institutions, as well as the general public, recognize the importance of preserving and restoring historical heritage for future generations.

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