GC Revista Nacional de Gerenciamento de Cidades
National Journal of City Management

ISSN 2318-8472, v. 12, n. 86, 2024

Proposal for intervention for the conservation and restoration of the Brum Chapel (Recife/PE)

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ISSN 2318-8472, v. 12, n. 86, 2024

ABSTRACT

This study aims to diagnose the pathological manifestations of the Brum Chapel, using four methodological steps, namely: characterization of the area, diagnosis, damage mapping, and guidelines for the restoration project. The case study was carried out at the Brum Chapel, located in the city of Recife/PE, in the northeast region of Brazil between 2020 and 2021. In this way, the research was able to guarantee the preservation and dissemination of facts and historical achievements of the Brazilian Army (responsible for the property), extolling the participation of the northeastern soldier in all historical episodes in the state of Pernambuco, providing culture and knowledge to visitors, in addition to recognition at the regional level, as a preservation agency and an example of conservation of military-religious architecture from the 17th century. The results obtained demonstrated the natural process of evolution of pathological manifestations, raising awareness of heritage management for planning and carrying out maintenance, enabling the compatibility of the building's needs with the available financial resources. It is concluded that in this process, public policies should make these actions viable through tax incentives that allow for the proper conservation of this property, respecting its original function.

KEYWORDS: Damage mapping. Diagnosis of pathological manifestations. Building inspection.

1 INTRODUCTION

The cultural appreciation of architectural heritage has been evolving as it is recognized as evidence for verifying historical facts that occurred in cities, and consequently as a social and cultural capital of great importance. Therefore, its preservation becomes essential (Amorim et al., 2023; Pio Santos; Silva Jr., 2021).

Architectural restoration is an important preservation action, since it ensures the interruption of the degradation process and enables the durability and historical mark of a culture or society (Albuquerque, 2020; Amorim *et al*., 2024 C).

However, actions to preserve historic buildings need to be much more comprehensive, combining new management techniques, the use of technologies and innovations to mitigate the scarcity of resources and financial investments. Only in this way is it possible to keep architectural heritage protected, preserved and maintained, ensuring the understanding of social memory (Lemos, 1981; Caldana; Rolim; Michelin, 2021). Therefore, to ensure the preservation and restoration of built assets, it is necessary to plan preventive maintenance, in addition to carrying out interventions (Albuquerque, 2020).

Adopting a conservation management plan for historic buildings is essential, since it structures all goals, actions and projects, based on their significance and usability (Tavares, 2021).

However, when there is no conservation management plan, a very common situation in historic buildings, a viable alternative may be to monitor the state of conservation through periodic inspection procedures associated with the graphic recording of pathological manifestations on the facades of historic buildings, using the damage map (Oliveira, 2008; Amorim *et al.,* 2024 B). This is because it is essential to align inspection techniques with the recording and updating of the conditions of a building of cultural interest (Innocencio *et al.,* 2021).

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According to the guidelines presented in the Manual for the Preparation of Cultural Heritage Preservation Projects (IPHAN, 2005), through the technical notebooks of the Monumenta Program: “the presentation of a restoration project is not necessary to obtain authorization to carry out simpler interventions, typical of maintenance, such as painting, replacement of damaged areas or materials, immunizations, roof revisions”.

Hence, the property manager can choose to periodically carry out building inspections to record the evolution of pathological manifestations in historic buildings through damage mapping, which will serve as a facilitating and guiding agent in the decision-making process for the execution of preventive actions and interventions (Barreto, 2020).

2 OBJECTIVES

The objective of this article is to present an intervention proposal aimed at the conservation and restoration of the Brum Chapel, located in Recife, PE. In addition, it aims to raise awareness in the scientific community about the importance of preparing comprehensive damage mappings, covering the entire building since professionals usually focus their solutions only on the facades.

3 METHODOLOGY

The research is of an applied nature, with immediate purpose and applications, having a quantitative-qualitative approach, as it is a work that aims to diagnose the pathological manifestations and the degradation process of the property, with the purpose of supporting the proposal of design guidelines for the conservation and restoration of the property. As a procedure, four steps were carried out, described by Amorim *et al.* (2023) and complemented by Amorim *et al.* (2024 A), namely:

a) **Characterization of the area:** systematization of information obtained through archival, bibliographical and oral research, with the aim of understanding and situating the building in time, identifying its origin and historical path.

b) Diagnosis: recording in detail the pathological manifestations on the facades of historic buildings, diagnosing the agents of degradation, causes and origins, through visual inspection and diagnostic activities.

c) Damage map: the graphic representation of the survey of all existing and identified damages in the building, relating them to their agents and causes.

d) Intervention Proposal: considerations obtained in stages A, B and C to support the choice of the best solutions to be adopted, respecting the integrity of the asset, in addition to the technical-economic feasibility of implementing the solution.

4 RESULTS OBTAINED

4.1 Characterization of the area

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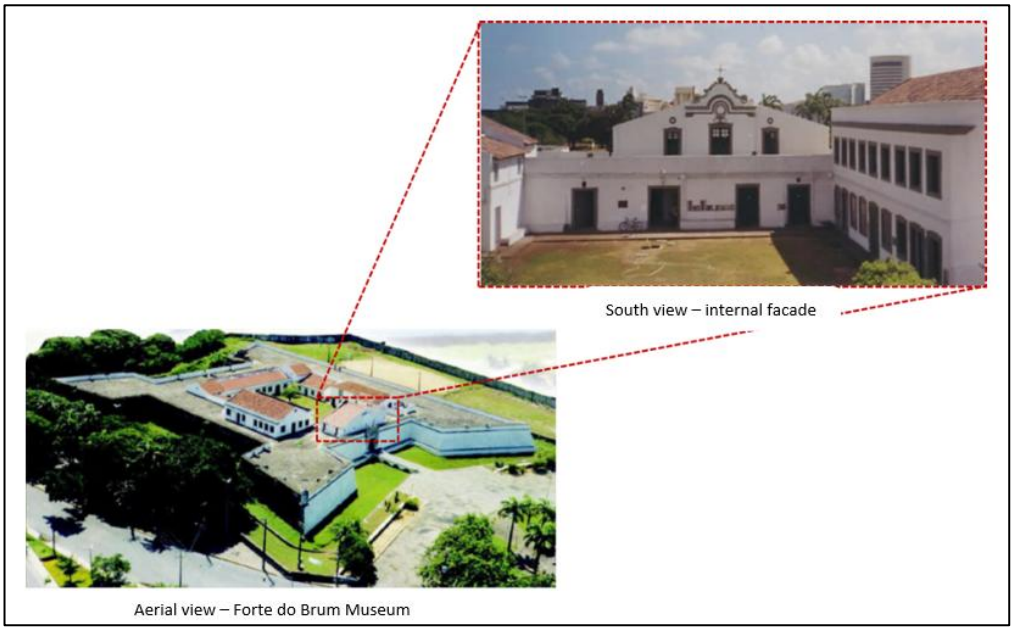
The Brum Chapel is located in the Brum Fort Pavilion, which is protected by a specific federal heritage listing law according to decree no. 25 of November 30, 1937, whose listing number is 101 – T – 38 (Rocha, 2018), as shown in Figure 1.

Figure 1: Aerial view and facade of the Brum Chapel.



Source: the authors

The Chapel of Saint John the Baptist of Brum, also known as the Brum Chapel, was designed in the 16th century style after the restructuring of the Fort in 1667. It was built using the brick and stone masonry system, with a triangular pediment topped by a central cross, having only one nave, two side galleries, a main chapel, a central opening and two windows at the ends, in addition to the roof built in a wooden structure, using trusses, rafters and slats (Rocha, 2018). Over the years, the facade has undergone renovations, currently presenting characteristics of the Mannerist style (Koch, 2001).

The Brum Chapel has a religious function and supports the activities of the Brum Fort, and therefore has areas such as chapel (nave), bathrooms, weight room, technical reserve and accommodation (Figure 02).

Today, the building complex formed by the Chapel of Saint John the Baptist and adjoining rooms in the Brum Fort, Recife is in a regular state of conservation and with well-defined uses. Because of the clear definition of the uses and their nature, this in no way harms the complex and the Brum Fort monument. Figures 2, 3 and 4 show the architectural survey of the building.

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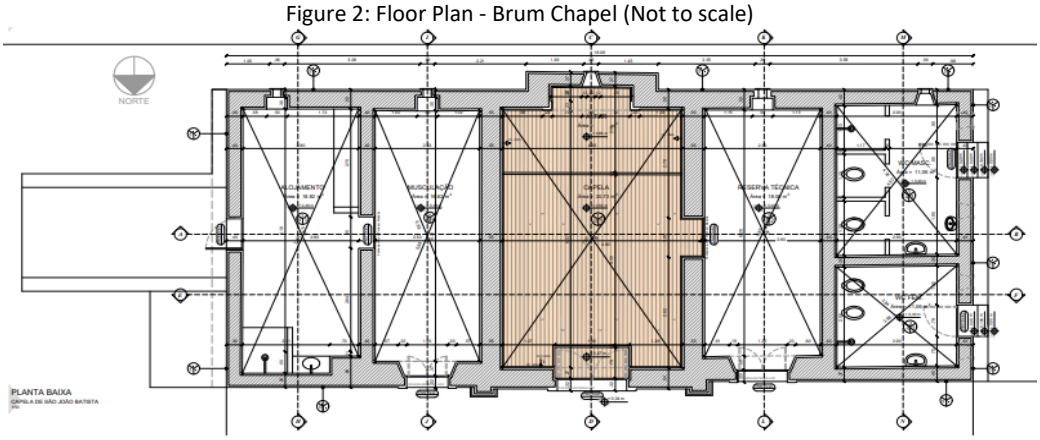
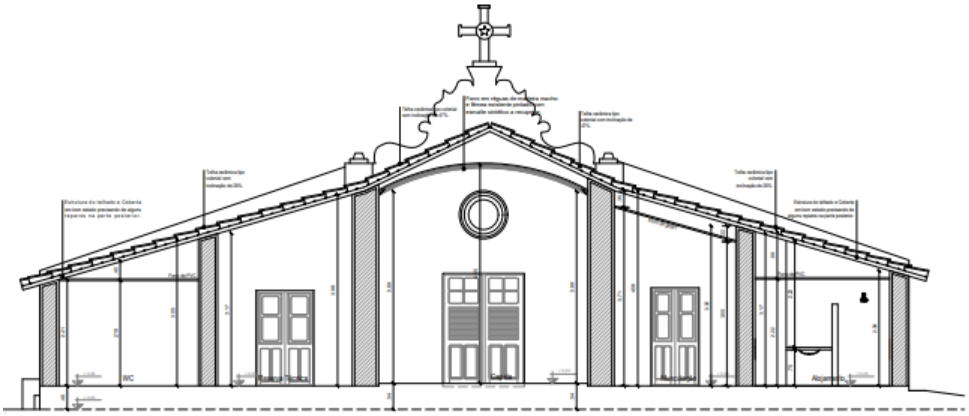
Figure 2: Floor Plan - Brum Chapel (Not to scale)



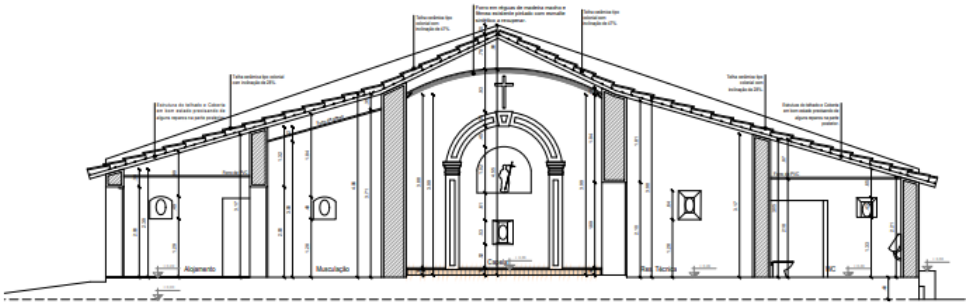
Source: Amorim *et al*. (2024 A)

Figure 3: Main Facade - Brum Chapel (Not to scale)



Source: Amorim *et al*. (2024 A)

Figure 4: Longitudinal Interior View - Brum Chapel (Not to scale)



Source: Amorim *et al*. (2024 A)

4.2 Diagnosis

The diagnosis found that the complex does not present any structural problems or significant damage. The Chapel has been used as a Catholic temple dedicated to the patron saint of the fort since the end of the 17th century.

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Unfortunately, its original altar was lost and cannot be recovered, since there are no fragments, descriptions or images left. Therefore, the internal structure formed by a niche with the image of the patron saint will remain in order to avoid a false historical record.

The internal structure of the Chapel will not be modified, although some restoration work will be carried out, mainly on the floor and ceiling. The proposal is to replace damaged parts on the wooden floor and rebuild the skirting board, which has been removed in some sections.

At the entrance to the Chapel, where the floor is lowered to allow the doors to open, the proposal is to replace the wood with a material that is more resistant to rain – a small section of travertine marble with a non-slip finish (Figure 5). A fixed ramp was not suggested, as this would unnecessarily alter the configuration of the monument. Since the difference in level is small, it can be overcome by a movable ramp.

Figure 5: Marble door frame of the Chapel. Note the wear on the floor due to the rain.

Source: by the authors

In the chapel ceiling (Figure 6), an old work made of bowl-shaped boards, the proposal is to restore the woodwork, the original shape, which is slightly deformed in some areas, and the original paintwork through a careful stripping process, since previous surveys revealed several layers of paint. Also, due to the small area surveyed, it was not possible to determine which phase would be the most relevant for historical and aesthetic purposes. Removing the synthetic enamel covering the ceiling will be one of the first steps.

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Figure 6: The ceiling seen from the altar. Note its deformation, giving the impression of a barrel vault rather than the bowl shape observed in the opposite direction.

Source: by the authors

The functionality of the adjoining rooms will remain the same, with some improvements being made. The shower will be removed from the accommodation, since this element does not meet the habitability, hygiene and safety requirements described in NR 24 - Regulatory Standard 24 - Sanitary and Comfort Conditions in Workplaces (BRAZIL, 2019), as well as current legislation regarding ergonomics and accessibility in buildings (ABNT, 1993), especially bathrooms.

It is recommended that there be space for more bunk beds and that a counter with sinks and cabinets be maintained. The floor will be replaced with better quality material, always prioritizing the safety of users. The weight room will remain, with only a small elevation of the floor and its replacement with non-slip material.

The Technical Reserve undergoes a small layout modification in order to improve the working conditions of the person in charge and to better accommodate the stored material. The bathrooms have had their layouts improved, aiming at the usage by the crew and occasional visitors. The proposal is that all the rooms adjacent to the Chapel have a wooden ceiling (wainscoting), more compatible with the nature of the building without, however, seeking to create a false history.

As for the roof (Figure 7), the proposal is to restore the woodwork, maintaining the use of sawn wood, which has already been incorporated into the genius loci of the Chapel. Returning to the use of round wood would be an anachronism that no longer makes sense today. A thermal-acoustic blanket should be placed under the woodwork and above the ceilings in order to protect the building from infiltration, large temperature variations and noise. Under no circumstances should the blanket be visible internally or externally. All internal and external painting of the Chapel and adjoining rooms will be done with white lime-based paint. Any repairs to the plaster will be done with lime and sand mortar.

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Figure 7: Current situation of the woodwork and roofing of the Brum Chapel

Source: by the authors

Attention should be paid to the stonework on the chapel's frontispiece and the borders of the elliptical oculi on its façades, which are currently covered by several layers of paint (Figure 7). The idea is to completely remove the paint, leaving the carved stone exposed as it was originally. This procedure will restore the beauty of the original composition, including bringing to light certain details that are currently hidden, especially the volutes and counter-volutes. The paint on the stonework should be removed using surgical scalpels and then washed with a nylon fiber brush, water and neutral soap. Please note that only the chapel's doorway is made of stonework; other elements such as the volutes on the frontispiece, the oculi and the bases are made of mortar, and therefore must maintain the same paint standard adopted in the fort. The doors to the weight room and the technical reserve only have sandstone lintel, and the borders are made of hand-laid bricks with lime and sand mortar plaster. The oculus must be unclogged, since it can be seen from the thinness of the closure that this is a recent intervention and that churches that have oculi in their frontispieces have them open to provide adequate lighting for their naves. Once open, the oculus will be sealed with pivoting glass, with metal parts applied directly to the masonry, as per the project, ensuring lighting and preventing rain from entering the interior of the Chapel.

4.3 Proposal for Intervention and Damage Mapping

In general, the restoration/requalification is an intervention with small, limited modifications without changing the locus of the Chapel or the Fort itself. The idea is to continue the already established image of the monument with some corrections/improvements (Rocha, 2018).

The intervention, in general, follows the precepts of the Burra Charter (ICOMOS, 1980) safeguarding its cultural significance, its substance, its preservation and taking into account its adaptation for uses already defined and that do not defile its existence as a monument or part of a monument.

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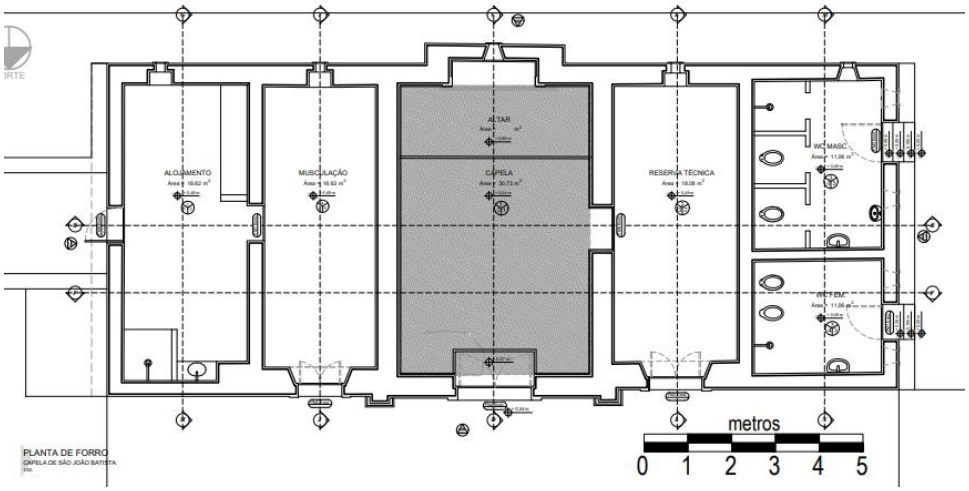
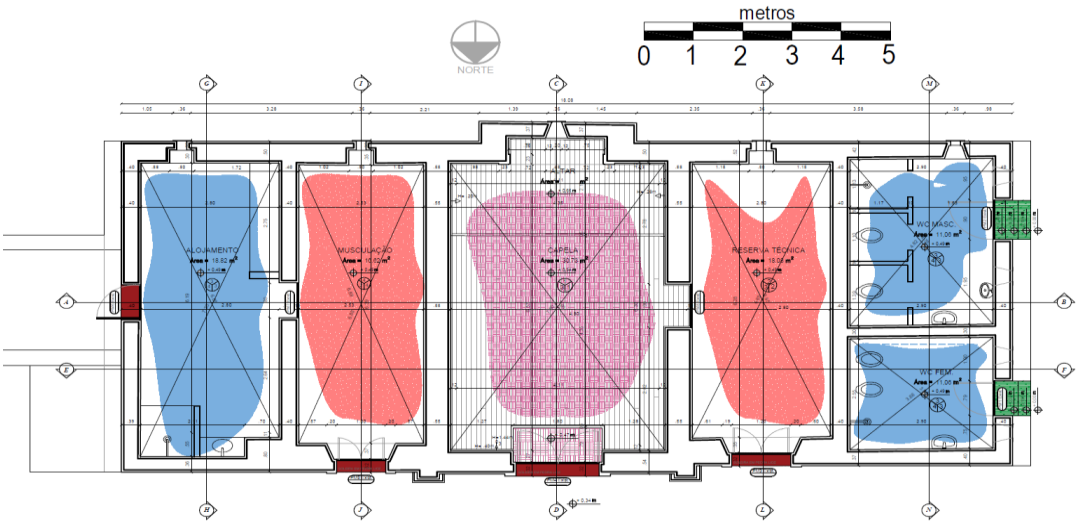
After the diagnosis of the pathological manifestations, graphic demonstrations were carried out following the treatment actions, as shown in Figures 8, 9, 10, 11, 12, 13 and 14.

Figure 8: Damage Mapping – Ceiling Plant



Source: Amorim *et al*. (2024 A)

Figure 9: Damage Mapping – Floor Plan



Source: Amorim *et al*. (2024 A)

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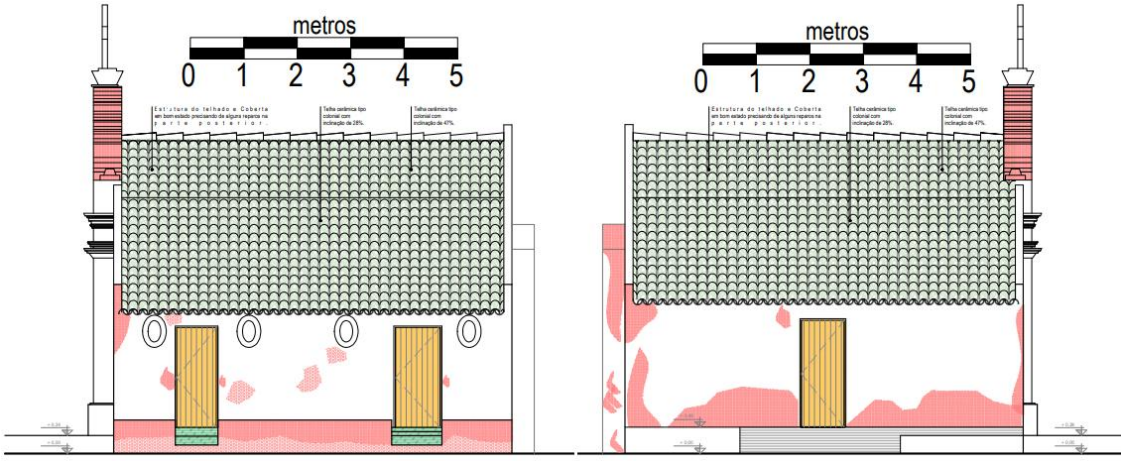
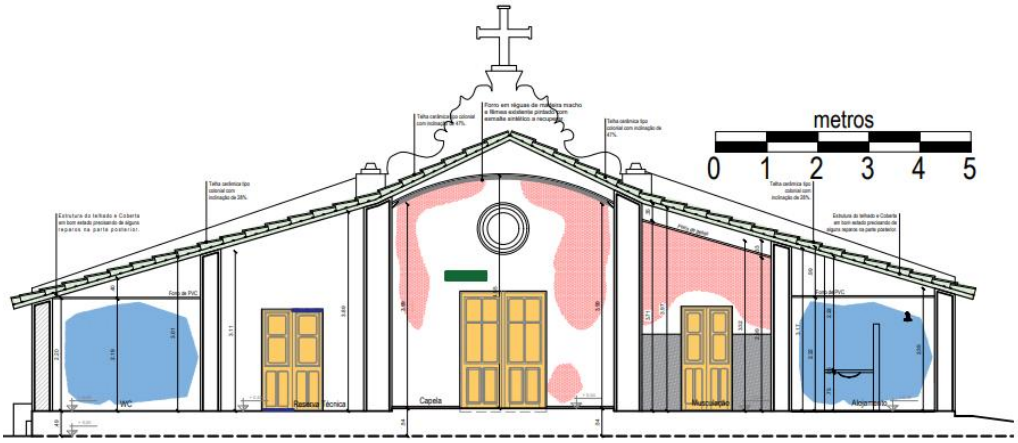
Figure 10: Damage mapping – West and East facades



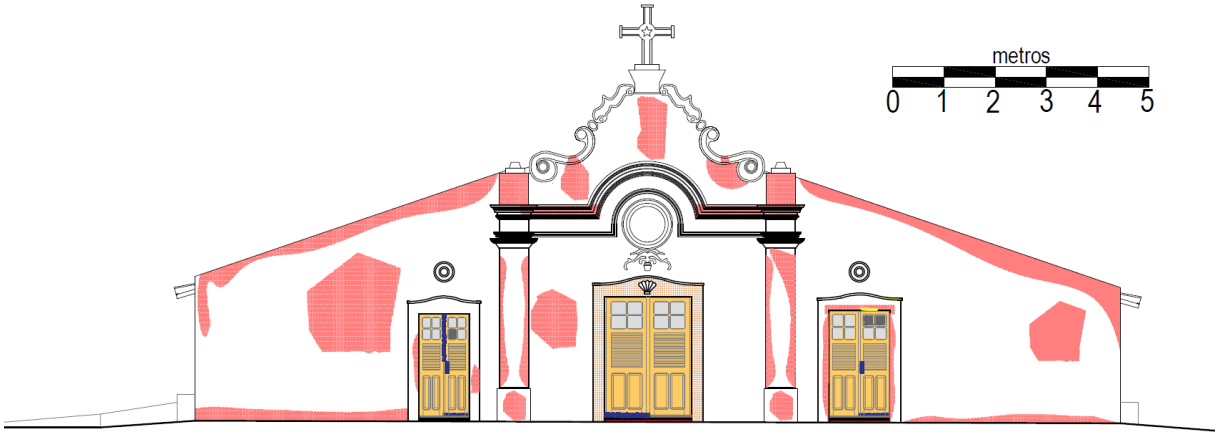
Source: Amorim *et al*. (2024 A)

Figure 11: Damage mapping – EF cut



Source: Amorim *et al*. (2024 A)

Figure 12: Damage mapping – North façade



Source: Amorim *et al*. (2024 A)

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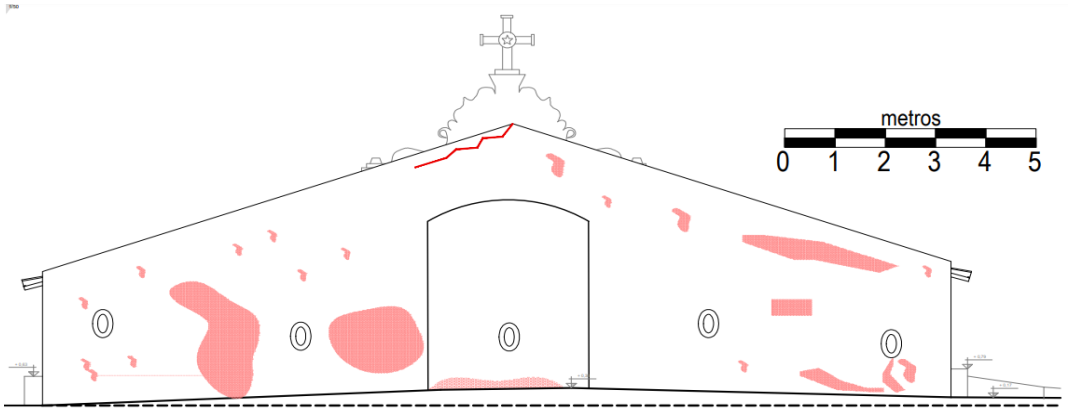
Figure 13: Damage mapping – South façade



Source: Amorim *et al*. (2024 A)

Figure 14: Damage mapping legend - Brum Chapel

Pathological Manifestations		Treatment Actions
	Stonework covered with successive layers of paint	Removal of the paint layer and cleaning of the stonework, aiming at the consolidation of the original surface.
	Roof structure and covering in good condition, in need of some repairs	Partial removal of damaged wooden structures and roof tiles, and replacement with material of the same technical composition.
	Ceiling with original paint covered with successive layers of paint and partially worn due to infiltration, with partial loss of the ceiling skirting	Removal of the expurgated paint layers and consolidation of the original paint. Including restoration of the ceiling, covering the damage caused by infiltration and repairing the partial losses in the ceiling skirting boards, in addition to carrying out final treatment
	Crack in the plaster	Restoration of the plaster damaged by the weather, using mortar with a composition of cement, sand and hydrated lime (ratio 1:2:9).
	Lime-based paint peeling off, without loss of plaster	Repainting in two coats of the damaged layers, using the colors specified according to the architectural executive project.
	Wooden flooring degraded due to infiltration and high flow, with partial loss of the skirting board	Restoration of the wooden floor, repairing the partial losses in the skirting boards, in addition to carrying out final treatment aimed at preserving it.
	Wear of the Lioz stone threshold, due to the action of the weather	Restoration of the Lioz stone floor, including the replacement of partial losses, in addition to carrying out final treatment aimed at preserving it.
	Completely worn cemented steps; Partial loss of ornamentation	Since it is not an element with historical value, the treatment actions must follow the replacement instructions specified in the architectural project.
	Partial loss of ornamentation	Restoration of the Ornament damaged by the weather, using mortar with a composition of cement, sand and hydrated lime (ratio 1:2:9).
	Partial loss of stonework	Replacement of partial losses, in addition to carrying out final treatment aimed at preserving it.
	Synthetic enamel worn	Removal of the layer of paint and cleaning of the stonework, aiming at consolidating the original surface.
	Completely worn ceramics	Since it is not an element with historical value, the treatment actions must follow the replacement instructions specified in the architectural project.
	Completely worn cemented flooring	Since it is not an element with historical value, the treatment actions must follow the replacement instructions specified in the architectural project.
	Broken glassware	Recomposing the glass elements, in addition to carrying out final treatment aimed at preserving them.
	Degradation of the frame with stained glass	Glass restoration, recomposing the glass elements, in addition to carrying out final treatment aimed at preserving the glass.
	Wear of paint on woodwork	Repainting the frame with paint of the same color and technical specifications as the original.
	Loss of elements	Only the part of the piece that is compromised should be replaced with a prosthesis (made of the same wood) and fixed in place.

Source: by the authors

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5 CONCLUSION

This research met the proposal for safeguarding the Chapel of Saint John the Baptist of Brum and was based on preservation, conservation, restoration and rehabilitation through permanent care, maintenance of the physical structures and organization of the internal spaces, their typologies, volume, colors, materials, ornaments, and so on.

In this sense, the research also motivates the community to preserve and disseminate the historical facts and achievements of the Brazilian Army, praising the participation of the northeastern soldier in all historical episodes in the state of Pernambuco, providing culture and knowledge to visitors, in addition to recognition at the regional level, as a preservation agency and example of conservation of 17th century military architecture.

The results obtained demonstrated the natural process of evolution of pathological manifestations, raising awareness among property managers for planning and carrying out maintenance, enabling the compatibility of the building's needs with the available financial resources.

The most frequent pathological manifestations found were leaks in the roof and skirting boards, as well as wear and tear on the wooden and stone floors due to the high flow of people and leaks. The roof's wood was degraded in some spots. In short, leaks and wear.

In this process, public policies should make these actions viable through tax incentives that allow these properties to be well preserved and to be used for residential purposes, while respecting their original function.

The removal, replacement and restoration of the degraded material is the main solution indicated for the restoration of the chapel, as well as painting and waterproofing of the roof and walls.

Any interventions must be replaceable, allowing the property to be adaptable, and stand out from the original materials to avoid false historical evidence or compromising the authenticity of these assets. Finally, the prescribed safeguarding actions met the needs and expectations of users and, at the same time, preserved the cultural significance and values of military architecture in the State of Pernambuco.

Finally, the study highlights the importance of an integrated approach, combining economic, social and heritage analyses. Its relevance lies in its contribution to the development of sustainable strategies for the preservation and promotion of historical and cultural heritage, providing valuable insights for public and private managers in this field.

6 ACKNOWLEDGEMENTS

We would like to thank Premier Engenharia LTDA for the material kindly provided.

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