

Non-structural pathological manifestations in housing buildings of Portuguese origin in Brazil: adaptation of rehabilitation interventions due to Brazilian bioclimatic zonation

Summary

Brazil is a country of continental dimensions, discovered by Portugal on April 22, 1500, which left, among others, a legacy of architectural culture in the civil construction of the colonial period, including housing buildings, whose survey indicates the number of 11,821 units, distributed over 8 bioclimatic zones. As a result, these buildings, subject to different climates, have similar anomalies that are influenced by the local climate, so the rehabilitation can be different in each place. Thus, the following research problem arose: What is the best way to rehabilitate the colonial construction in each Brazilian bioclimatic region?

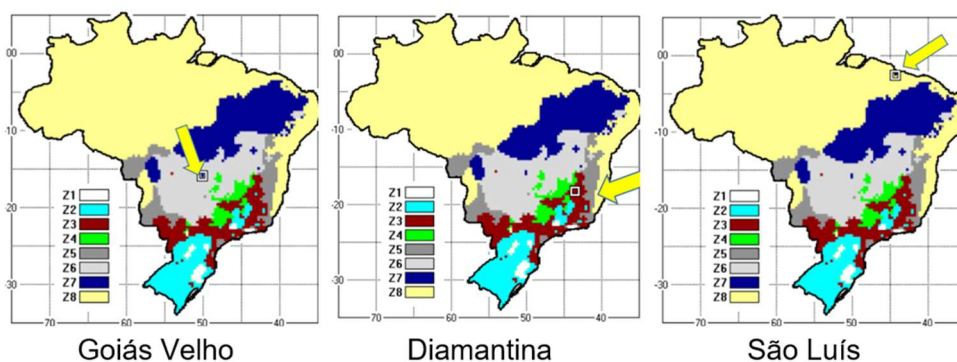
Therefore, the main objective of this thesis is to identify how climatic conditions affect and potentiate the appearance of certain non-structural pathologies in these buildings, in each Brazilian bioclimatic zone, as well as to define the most appropriate intervention strategies in order to ensure their adequacy and effectiveness, increasing durability, highlighting the type of intervention according to the climate. As a methodology to answer the research question, the three bioclimatic zones that have the highest number of buildings in each one was selected. In this way, the selection of bioclimatic zones 3, 6 and 8 was carried out, which, due to their location in the Brazilian territory, distinguish between themselves in climatic characteristics and contain, respectively, the largest number of cities.

Selection of cities: From bioclimatic zone 3, the city of Diamantina was chosen, in the State of Minas Gerais, Southeast Region, which has 1,350 buildings. As for bioclimatic zone 6, the city of Goiás Velho, in the State of Goiás, which has 550 residences, was chosen. As for bioclimatic zone 8, the city of São Luís, State of Maranhão, was chosen, with 4,000 buildings. It is worth mentioning that the three cities chosen are also part of the UNESCO Cultural Heritage of Humanity. The field research, carried out from May to September 2023, covered 193 buildings distributed by city as follows: São Luís (67), Diamantina (65) and Cidade de Goiás (61).

The preliminary results show that, in the three cities, the predominant pathological manifestations are related to water, especially the city of São Luís which, because it is subject to the equatorial climate, is subject to a large volume of rain and humidity, contrasting with Diamantina, where the climate is mild, and the city of Goiás where temperatures are high and the humidity very low in the dry period. Regarding the rehabilitation proposal, this will occur when all the data are tabulated, in order to compare the pathological manifestations, existing in the constructive elements, with the climate of the bioclimatic zone where they are.

Keywords

Pathological manifestations, Brazilian colonial buildings, bioclimatic zones, rehabilitation.



Cities and buildings by bioclimatic zone.



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Period

2020-2024

Funding

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