

ARTIGO - 3. O PATRIMÔNIO E NOVAS TECNOLOGIAS : O USO DE FERRAMENTAS DIGITAIS PARA DOCUMENTAÇÃO E CONSERVAÇÃO DO PATRIMÔNIO / INTELIGÊNCIA ARTIFICIAL E SEUS IMPACTOS NA PESQUISA E INTERPRETAÇÃO DO PATRIMÔNIO / DESAFIOS ÉTICOS E METODOLÓGICOS NA APLICAÇÃO DE NOVAS TECNOLOGIAS NA CONSERVAÇÃO / O PATRIMÔNIO DIGITAL E SUA CONSERVAÇÃO

REPRODUCTION OF THE CINTRA ET AL. (2020) RESULTS FOR THE 2D GPR SIMULATION OF THE THEATRO MUNICIPAL DO RIO DE JANEIRO, USING REFLEXW

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The use of digital tools and non-destructive testing is fundamental in the evaluation and conservation of historical and cultural heritage buildings. Among these, the geophysical technique Ground Penetrating Radar (GPR) is essential for locating and mapping underground structures. The present study used 2D GPR data from masonry shells of the Theatro Municipal do Rio de Janeiro, a historical and cultural heritage building of great relevance to Brazil, to perform simulations with the ReflexW software. The objective was to analyze the behavior of radargrams under real conditions and serve as a reference for future interpretations. The 2-D simulation module for the propagation of electromagnetic waves in the ReflexW software proved to be efficient. After data

processing, the simulations showed consistency between the synthetic and real radargrams. Our results highlight the importance of implementing simulation before fieldwork, as it helps choosing the best parameters to be used in data acquisition, such as frequency, source-receiver spacing, and antenna characteristics. This also prepares the processing for possible anomaly patterns identified in the radargram, aiming for faster and more accurate responses. These simulations serve as a crucial reference for interpreting radargrams and assist in the precise characterization of the shells, directly contributing to the conservation and structural evaluation of the heritage. This tool can be used in the future as an instrument for decision-making for future research and facilitate obtaining answers in the field without the need for invasive investigation methods.

Palavras-chave: gpr; reflexw; heritage buildings.