

COMPUTATIONAL DESIGN FOR THE PRESERVATION AND ENHANCEMENT OF HISTORICAL HERITAGE. A PREFABRICATED COVERING PROTOTYPE FOR ARCHAEOLOGICAL SITES IN RURAL CONTEXT

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Abstract

In Italy, many archaeological sites in peri-urban and rural areas are in a deep state of neglect, with unprotected remains and no prospects of enhancement. The paper shows the results of a study aimed at developing a parametric prototype of a prefabricated coverage, to be adapted to various conditions. The Roman Domus of the Acropolis of Populonia in the archaeological park of Baratti and Populonia in Tuscany was chosen as case study. The prototype was parametrically realized using heuristic algorithms based on natural selection (Genetic Algorithms), associated with multi-objective optimization criteria. The algorithm was conceived to optimize the support pillars' position and the visiting path, in relation to the main points of interest of the archaeological site. The final product consists of a wooden structural covering with 11 steel circular-section pillars, completed with a casing made of wood slats and opaque white PVC sheets.

Keywords: Archaeological sites; Computational design; Covering structures; Cultural heritage, Parametric architecture; Parametric engineering.