

1.14.8. GROUND PENETRATING RADAR APPLICATION IN THE CASE OF THE NEOCLASSIC BUILDING OF THE GREEK PARLIAMENT IN THE CENTER OF ATHENS

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This work presents a historic plasters' study of the Hellenic Parliament historic building. The Hellenic Parliament is the Parliament of Greece, located in the Parliament House (Old Royal Palace) and the current building is comprised by a neoclassical three-floor structure which was designed by Friedrich von Gärtner and completed in 1843 in order to serve originally/initially as a palace for the Greek Monarchs. After suffering extensive damage due to fire (in 1909), it entered a long period of renovation and to this end, this study aims for the restoration of the original historic plasters and is the result of a research program hold in the period 2007 – 2008. To this end, the use of non-destructive techniques (mainly Ground Penetrating Radar –GPR) was supplementary, both as testing tools for the diagnostic study of the structural materials as well as identifying agents of further conservation related inquiries.

The method of reverse engineering was used for the study of historic plasters, an approach with which the chemical composition and decay of the original plasters was assessed, as well as the technology that produced them. Moreover, the historic plasters' colorimetric values were assessed and furthermore, colorization of the original plasters was found as an effect of the crushed stone (used as aggregate) without the addition of pigments in the originally used material. The use of GPR scans throughout the buildings exterior facades, targeting to identify both the initial plasters (exposed to environmental phenomena throughout the years) as well as the restored ones showed extensive different layers throughout the building, a multitude of internal discontinuities and all in all a lack of sufficient coherence between the original plaster/material and the restorations that have taken place so far.

Based on these above data, various compositions of modern restoration plasters were prepared and tested. Better results based on set criteria (such as aesthetic and chemical compatibility of the restoration material to the original one) were yielded by a mix-design, which contained hydrated lime, metakaolin and crushed limestone.

Before the final application of the designed restoration plasters, a pilot application of the selected composition is to be scheduled. Due to the great importance of the current application to this historic building, a small scale production of the restoration plasters should be organized in order to guarantee the standardized quality of the restoration plasters.