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## **Conservation condition of the Wall of Talamanca de Jarama, Madrid, Spain**

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### **ABSTRACT**

This study consisted of the analysis of the building materials of the Wall of Talamanca de Jarama, 40 km Northern from Madrid city. The structure is inscribed as a Cultural Interest Property of the region of Madrid. Its original role was as a defensive system around the village against enemies, with references to the beginning of its construction dating back to the 10<sup>th</sup> – 11<sup>th</sup> centuries. The Wall is partially ruined, completely lacking some sections. The building materials used for the construction of the Wall are bricks, mortar (both joint and rendering mortars), stone and rammed-earth. The brick, due to its abundance and variability has been deeply studied.

A detailed mapping of the different building materials was carried out. The petrography of the materials was performed by means of polarizing-light microscopy. Mineralogy was determined by X-Ray Diffraction. In the specific case of rammed-earth materials, granulometry analysis was carried out. Among the petrophysical properties, the following were determined: colour (spectrophotometer), anisotropy (ultrasounds velocity), hardness (Schmidt hammer), porosity and densities (saturation test), and micro and macroporosity (Hg intrusion porosimeter).

Regarding bricks, results show five tipologies which could probably account for different historical periods. Firing temperatures have resulted on the best quality index for bricks.

The main decay forms that have been observed in the Wall are grain-disintegration, efflorescences, man-induced scratching, biodeterioration and dampness. Main decay causes are related to the water entry. Original bricks resulted better preserved than the more modern ones used for the substitution of the formers.

The main aim of this study is to get a deep knowledge of the building materials constituting the Wall, in order to carry out the appropriate restoration project in a future, thus, avoiding a further deterioration of the Monument.

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