

Aging Effect on the Integrity of Traditional Portuguese Timber Roof Structures

António Murta¹

Humberto Varum²

Jorge Pinto³

Luís Ramos⁴

Vítor Cunha⁵

Rui Cardoso⁶

Lina Nunes⁷

ABSTRACT

Traditional buildings basically include natural and autochthonous construction materials and are built with sustainable construction techniques. The knowledge of these materials's state and construction techniques is required for a proper conservation/renovation work. It is well known that the lack of maintenance is one of the main causes that contribute to the high degree of degradation that the Portuguese traditional buildings unfortunately have. That degradation may even compromise the overall structural integrity of the building thus reducing its lifetime's expectation. Meanwhile, a partial or even full demolition of a building is still an often occurrence in the Portuguese context. From a sustainable and building heritage perspectives that practise may be inadequate. Taking into account that generally the degradation problems are linked with roof's leaking anomalies and that the structural components of the roof tend to be the first ones to be affected, this timber structural roof components of Portuguese dwellings were the object of the research work here presented.

KEYWORDS

Aging effect, Used timber, Rehabilitation, Sustainability, Roof structures.

¹ Department of Engineering of Trás-os-Montes e Alto Douro University (UTAD), Vila Real, PORTUGAL, amurta@utad.pt

² Department of Civil Engineering of Aveiro University (UA), Aveiro, PORTUGAL, hvarum@ua.pt

³ Department of Engineering of Trás-os-Montes e Alto Douro University (UTAD), Vila Real, PORTUGAL, tiago@utad.pt

⁴ Department of Engineering of Trás-os-Montes e Alto Douro University (UTAD), Vila Real, PORTUGAL, lramos@utad.pt

⁵ Department of Engineering of Trás-os-Montes e Alto Douro University (UTAD), Vila Real, PORTUGAL, vcunha@utad.pt

⁶ Instituto Politécnico de Coimbra (IPC), Escola Superior de Tecnologia e Gestão de Oliveira do Hospital (ESTGOH), Oliveira do Hospital, Portugal, rui.cardoso@estgoh.ipc.pt

⁷ Structures Department. Laboratório Nacional de Engenharia Civil (LNEC), Lisboa, Portugal, linanunes@lnec.pt