Constructive idiosyncrasy in traditional wooden-beam floors in the civil architecture of Valencia, Spain

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EXTENDED ABSTRACT

Previous knowledge of constructive system and research on historical beams structures are very important to the aim of a proper preservation and restoration. More information about a specific type of structure is known, more prepared to solve its structural problems and wood degradation the architects will be. Not only socio-economic conditions help to the spread of a constructive system rather than others but also a specific site with its climate and the peculiarity of its architecture. Because of these reasons the study and research should be localized to permit later a pertinent comparison. One of the main points of this analysis is related to the contextualization of the aspects associated with timber which is floor framework's main material. Is possible to understand how the anthropic pressure on Valencian forests and the consequent and progressive deforestation lead to a change in the constructive features.

This work aims to record and classify the historical timber floor framework of Valencia in Spain. This research is based on the information resumed in the register and drawings outlined for each of the 221 floors surveyed inside 33 buildings in the historical center of the city. Thanks to the amount of data collected, was possible a statistical analysis and a detailed study of the four categories listed here.

The first type is the coffered structure excluding examples where the frames and panels are just decorative. This wooden beam floor has two groups of carved strips of wood with trapezoidal or molded section. The strips of the first group, called cinta, are long and perpendicular to the beams in order to improve rigidity. The others, called saetino, are shorter and assembled together with the previous elements compose the frames of each coffer. Auxiliary elements in these frameworks are the corbels and timber plates as well as the cornices that run around the perimeter walls. The second category is the structural board floor, where perpendicular planks are nailed to the beams. On this structure lies the overhanging paving usually made of tiles. The other two categories combine wood and bricks. The timber and bricks combined structure is made of parallel beams and perpendicular battens. The bricks lie on this wooden structure and support the paving. This constructive feature is quite common also in roof structures. Finally, the most common type of beam floors is the vaulted bricks ceiling, they started to be used consistently in 1700 because of the wood production crisis. The structure consists of beams which are carved on the lateral side or made by three pieces to support a timbrel vault built without using any wood form or centering.

All this information was collected in order to know the real design of wooden-beam floors in Valencia. This knowledge is very useful to all the architects that work with historical civil buildings because

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they can easily distinguish one type from the other and imagine how the section is just from observing the structure from underneath.