

Analysis of the Planar Vault Under the Choir Loft of the Monas-Tery of El Escorial



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Arches and vaults are typical elements of ancient buildings. They are formed by voussoirs that resist the pressure they receive and transmit them through compression forces. The transmission of these forces justifies their curved shape. For this reason, arches and vaults are omnipresent elements in ancient constructions, all of them masonry structures. However, when visitors enter the Basilica of the Monastery of El Escorial, they find a narthex with a flat or planar vault. This vault is located under the floor of the choir loft. Its geometric characteristics and its shape, with no curvature, make it an architectural anomaly and a brilliant solution within masonry structures. Therefore, this article tries to analyse the construction process and the structural behaviour of this vault, to understand its operation and how it remains standing five hundred years after its construction.

Biography:

Rubén Rodríguez Elizalde is Geologist and Civil Engineer, PhD in Architecture and Heritage and Senior Occupational Health and Safety Degree. On professional level, he is specialized in pathology and structural rehabilitation. In addition, he has carried out preventive management tasks, fundamentally in construction, metal and entertainment sectors for the last twenty years: he has worked as execution director, health and safety coordinator on project phase and health and safety coordinator on execution phase. In this sense, he has been health and safety coordinator of great renown works in Spain. Currently, he is a professor at various university centers, such as Universitat Oberta de Catalunya (UOC). In addition, he is Member of the National Association of the Technical Inspection of Structures in Spain, member of the Geology Applied to Engineering Spanish Association and member of the International Association for Engineering Geology and the Environment. In addition, he is Technical Director at EIP, company specializing in structural rehabilitation and prevention management in the construction sector. As a final anecdote, it should be noted that Rubén is a Remote Piloted Aircraft (RAP) Pilot and a Pilot Instructor and Examiner.