

Corbelled domes structural behavior

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Abstract In the Mediterranean area, buildings with roofs arranged as corbelled domes comprise a widespread and greatly valuable heritage that deserves protection and enhancement. Unfortunately, structural behavior of corbelled domes has been investigated only to a limited extent. In particular, in the most known approach, the so-called corbelling theory, analysis is formulated by imposing the balance of the overturning of infinitesimal dome meridian wedges considering only a vertical forces transmission. The application of the corbelling theory in two real case studies shows that the theory is not able to capture the structural behavior of the corbelled dome. The paper highlights that the key factor of the structural behavior is the horizontal action along the parallels of the dome, produced by the engagement and friction between the blocks, or from the cohesion if there is mortar. A modified corbelling theory is proposed to take into account, in structural analysis, the actions along the parallels.

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