Earth domes in a school building in Santa Eulàlia de Ronçana, Catalonia

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Abstract The following is the technical solution of a new variant of dome construction without formwork made with compressed earth blocks (CEB) used for the bioconstruction of a public school in Santa Eulàlia de Ronçana, near Barcelona. This was the winning proposal among twelve others in a tender. In addition, the project has won two prizes for sustainability and environmental quality, these are the Ecoviure and the Endesa Awards 2010. This project uses two types of domes: the elliptical section and a heart shaped section, a very interesting case for being unique in plan and cross-sectional views. These forms reflect the need to avoid excessive height in interior spaces, having a radius of more than six metres, and in turn reducing the resulting horizontal tension. To calculate and draw it exactly graphic statics have been applied to a section of the wedge-shaped dome. Finally, we evaluate the costs and time spent on implementation, which are competitive and acceptable for contemporary works that seek greater spatial and environmental quality.

Keywords Nubian technique, compressed earth blocks, heart shaped dome, sustainability