

**St. George Orthodox Church**

Lead Architect: Vinu Daniel

Firm: Wallmakers

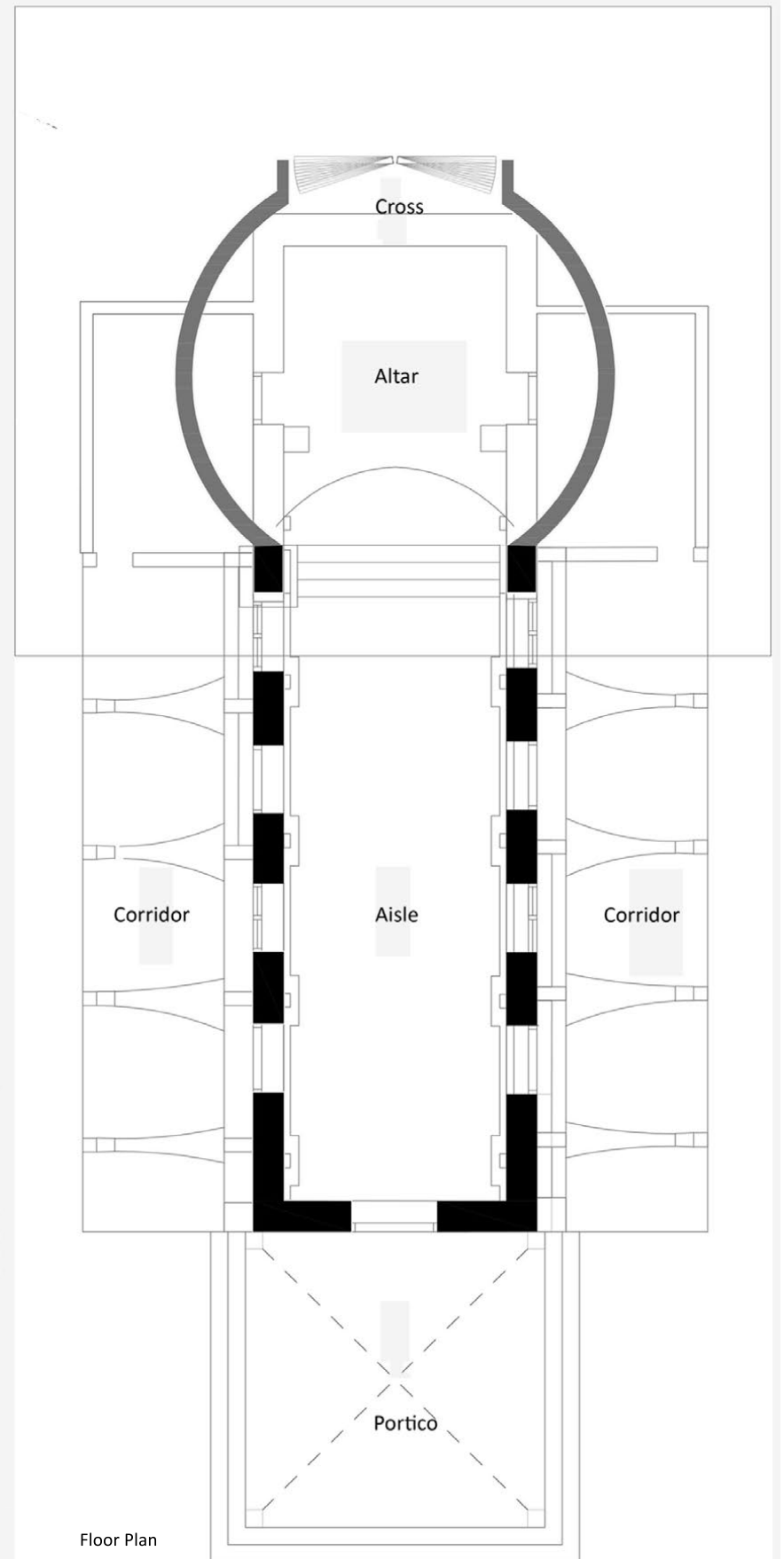
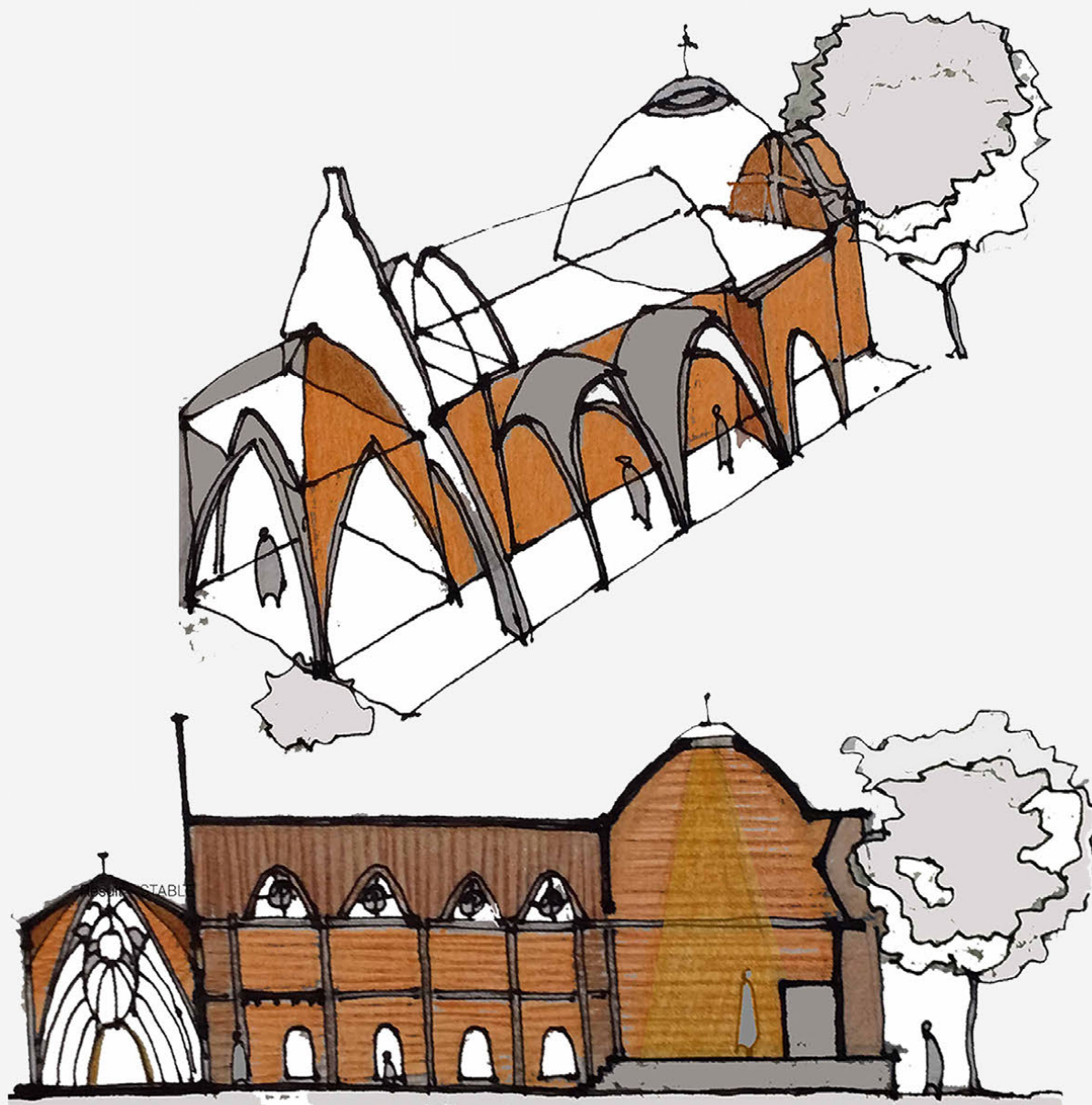
Location: Kochi, India

Area: 221 m<sup>2</sup>

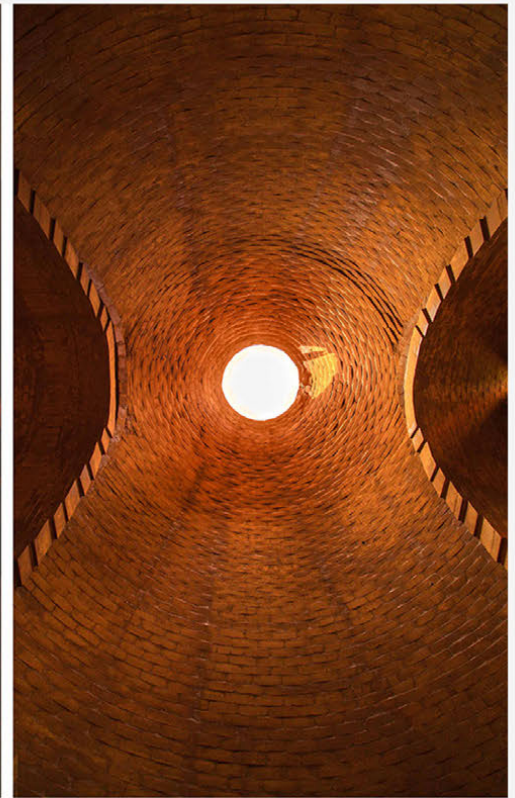
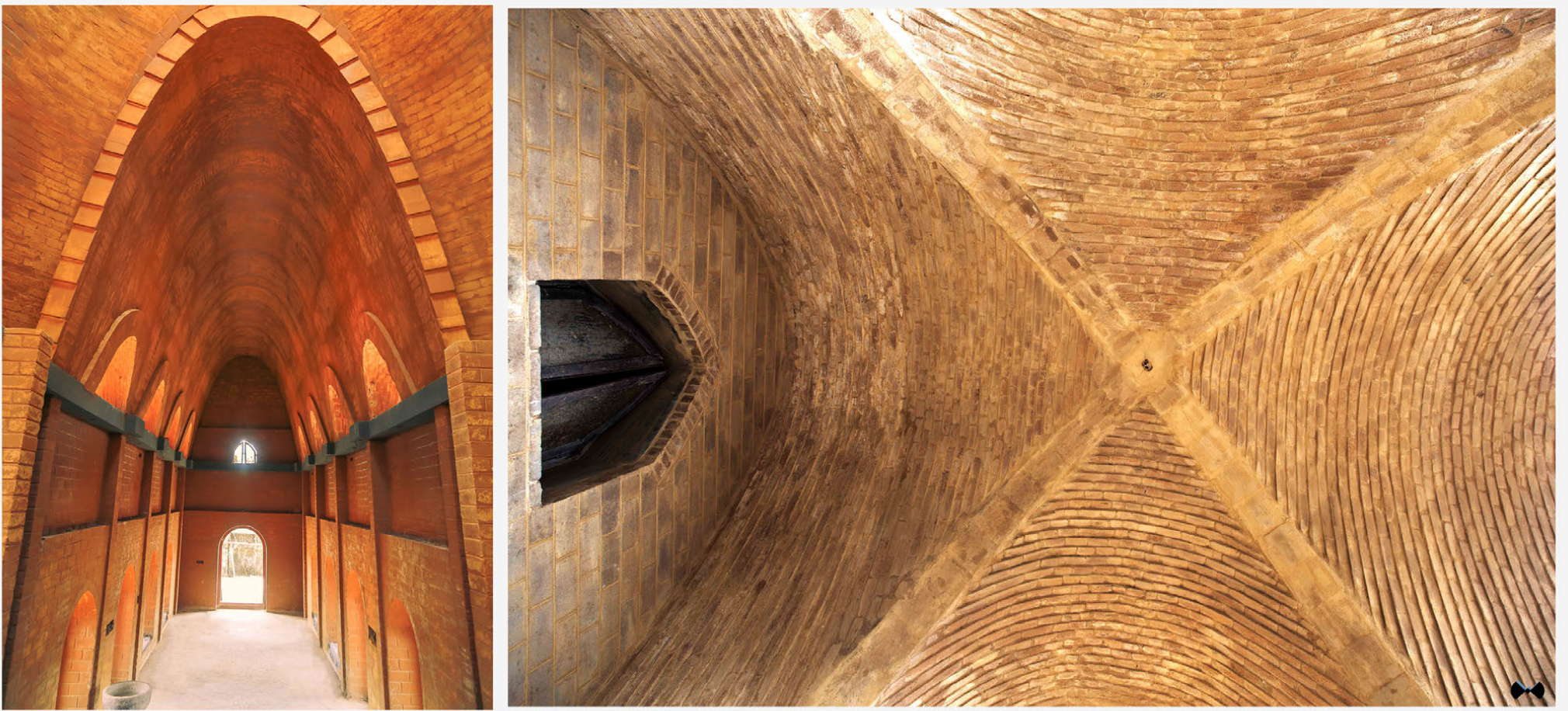
Year: 2016

Photographs: Jino Sam

The concept of domes, vaults and arches rose from early symbols of eastern Christianity like Marthoma cross finally ending in an altar blessed by a "cross of light" a concept by Ar.Tadao Ando but in this case by earth bricks, by nature.

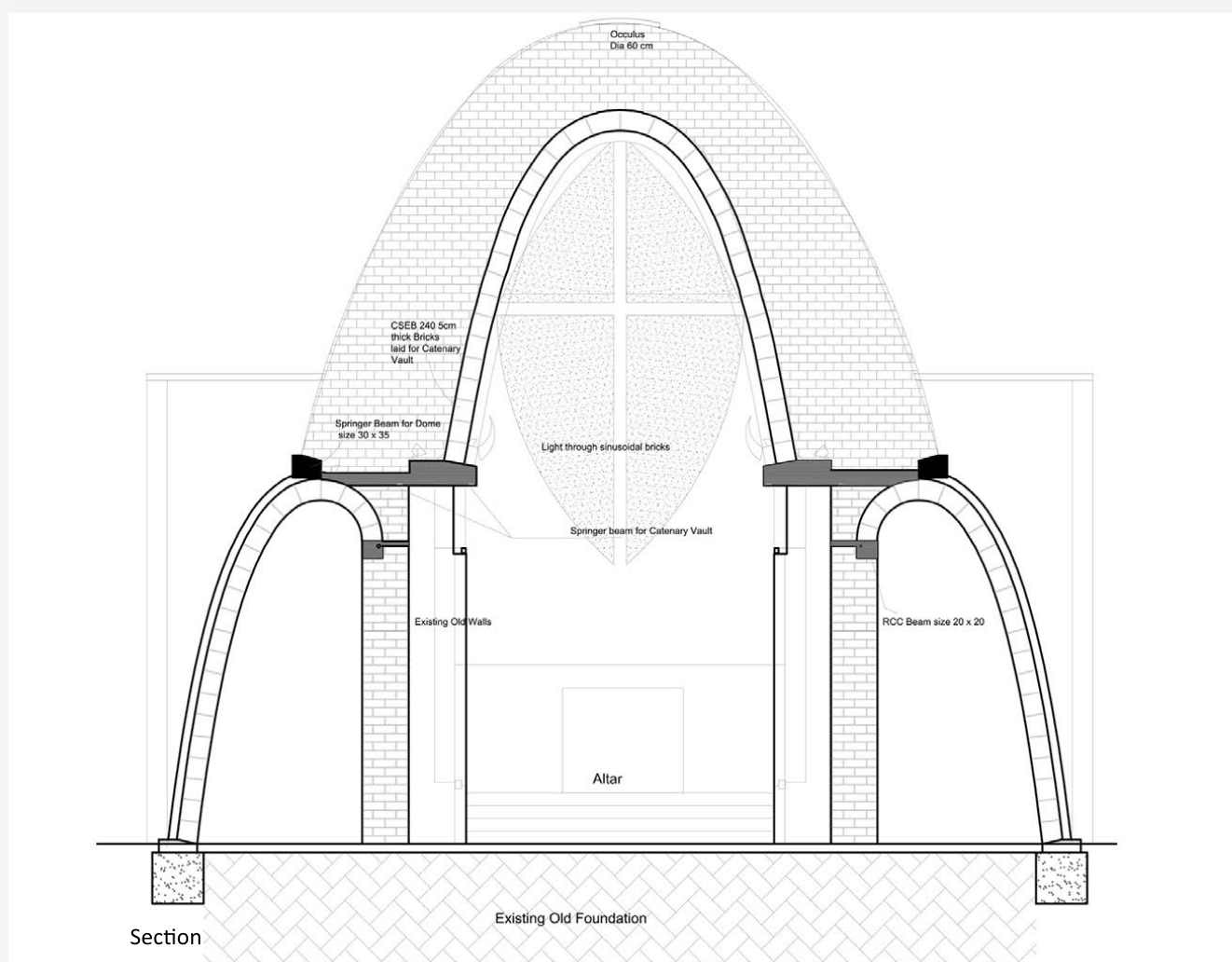






The masons received training by architect Vinu Daniel in building with compressed stabilized earth block using ancient Nubian technology of arch and vault building without extensive shuttering. They were also trained to create these structures using a chain-study method, which helps to stabilize the right shape of the arch before the execution begins. The structural study was first formulated by Antonio Gaudi in some of his structures which engineers posthumously found out. The same technique is employed to achieve stability in the arches.





The altar and the aisles of the church are supported by flying buttresses that were built without shuttering.

The exploratory spirit combined with pressing demands is from where the design is born; which is further evolved through a series of dialogues between the site, the masons, the architect and the clients.



#### EMBODIED ENERGY

With increasing demand over resources, it is the responsibility of architects to use materials with very less embodied energy. Mud as a material can be expressed in its true form through various methods like earth blocks, rammed earth, wattle and daub and many more.

#### CSEB:

- Initial embodied energy (MJ/m<sup>3</sup> of materials)
- Carbon emission (Kg of CO<sub>2</sub> /m<sup>3</sup> of materials)

CSEB consumption is 4 times less energy than country fired bricks.

- CSEB produced on site with 5 % cement = 1,112.36 MJ/m<sup>3</sup>
- Country fired bricks = 4,501.25 MJ/m<sup>3</sup>

CSEB pollution is 4 times less than country fired bricks.

- CSEB produced on site with 5 % cement = 110.11 Kg of CO<sub>2</sub> /m<sup>3</sup>
- Country fired bricks = 444.12 Kg of CO<sub>2</sub> /m<sup>3</sup>

