

Location: D-99425 Taubach
Architect: Kerstin Vogel, Weimar
Earth building: primarily self-built
Building period: 1997-1998



Detached House, Taubach, Germany

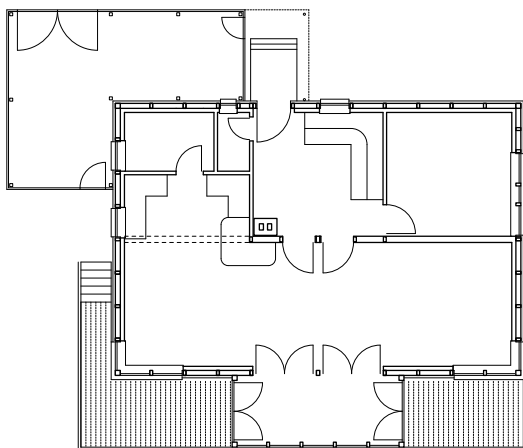


This detached single family house is built as a timber frame construction employing earthen building materials as infill-material. It is situated on a south-west facing incline as part of an estate of 90 detached and terraced houses. In contrast to much of the surrounding estate (many of which are “catalogue” houses) the house combines an unassuming appearance with a carefully planned climatic concept. It is a good example of how earthen building materials can be used for typical everyday buildings.

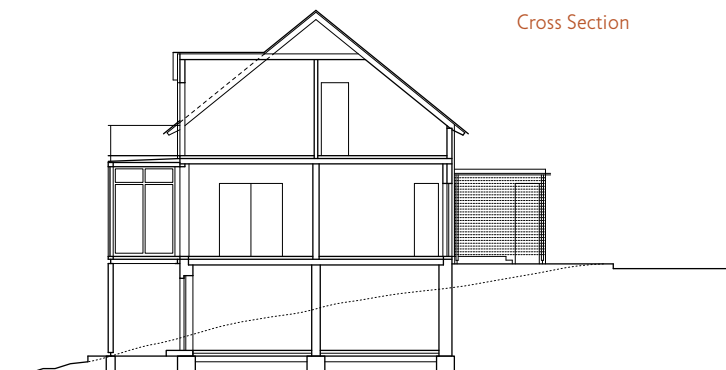
The plot is accessed from the north and slopes away towards the south. A cellar inserted into the slope compensates for the difference in level. A small garage and

storage room is located next to the road on the north-west corner of the building and is enclosed by wooden slatted walls and a green roof.

The house opens out towards to the south: at ground level, a veranda with conservatory surrounds the south-side of the building as a separate construction on timber stilts. The conservatory functions as a sun-lounge collecting the sun’s warmth during cold but sunny winter days. During hot summers, blinds and ventilation openings protect against overheating. The roof of the conservatory is also the floor of the balcony above. The roof space is a “half-storey”, the rafters beginning at a height of 0.85 m above floor level.



Ground Floor



Cross Section

earthen building · case study

Floor area: 170 m²
Building cost: 235 000 €
Building cost/m²: 1380 €/m²

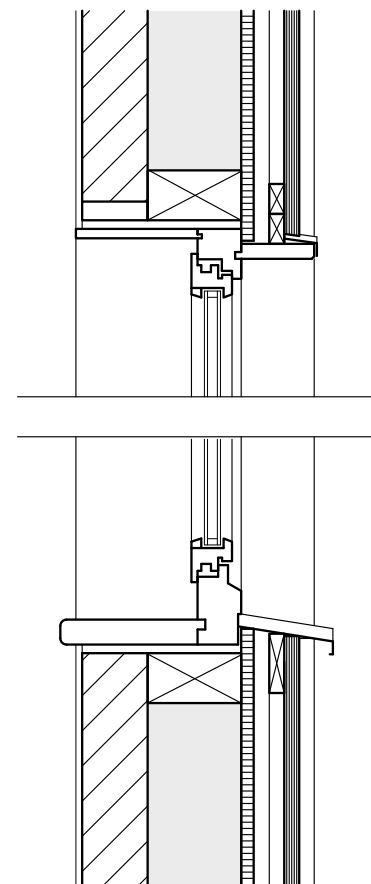


The cellar is a masonry construction of perforated brickwork with a single layer of earthen plaster interior finish. Cellulose insulation is used to fill the cavities between the 140 mm section timber posts of the timber frame construction. The cavity is closed on the inside by an inner skin of light clay bricks (4 DF 240/115/238 mm perforated; $\rho_d = 1100 \text{ kg/m}^3$; $\lambda \approx 0,35 \text{ W/m}^2\text{K}$ laid in clay mortar with 2-layer earthen plaster interior finish) and on the outside by 20 mm thick impregnated softwood panelling.

All supporting internal walls on the ground and upper floor are part of the

timber-frame construction with earth bricks laid in earth mortar as infill material (240/115/175 mm; $\rho_d = 1700 \text{ kg/m}^3$ without perforations) and plastered on both sides with a double layer of earthen plaster. The fine clay finishing layer is left unpainted providing a natural warm surface finish and atmosphere. To improve the thermal mass of the building, "green" unfired bricks (NF, 2 DF) are laid on boarding between the timber floor joists.

At ground floor level a large wood-fired stove made of earth forms the central element in the house and provides a pleasant radiation warmth. This is complemented by a gas-fired central heating system.



External wall section:

Vertical timber boarding, aerated cavity
 20 mm Impregnated softwood panelling
 140 mm Timber frame, cellulose insulation
 115 mm Lightweight earth bricks 4DF
 2-layers Earthen plaster