

Insulation concepts

Complementary systems – loadbearing layer inside

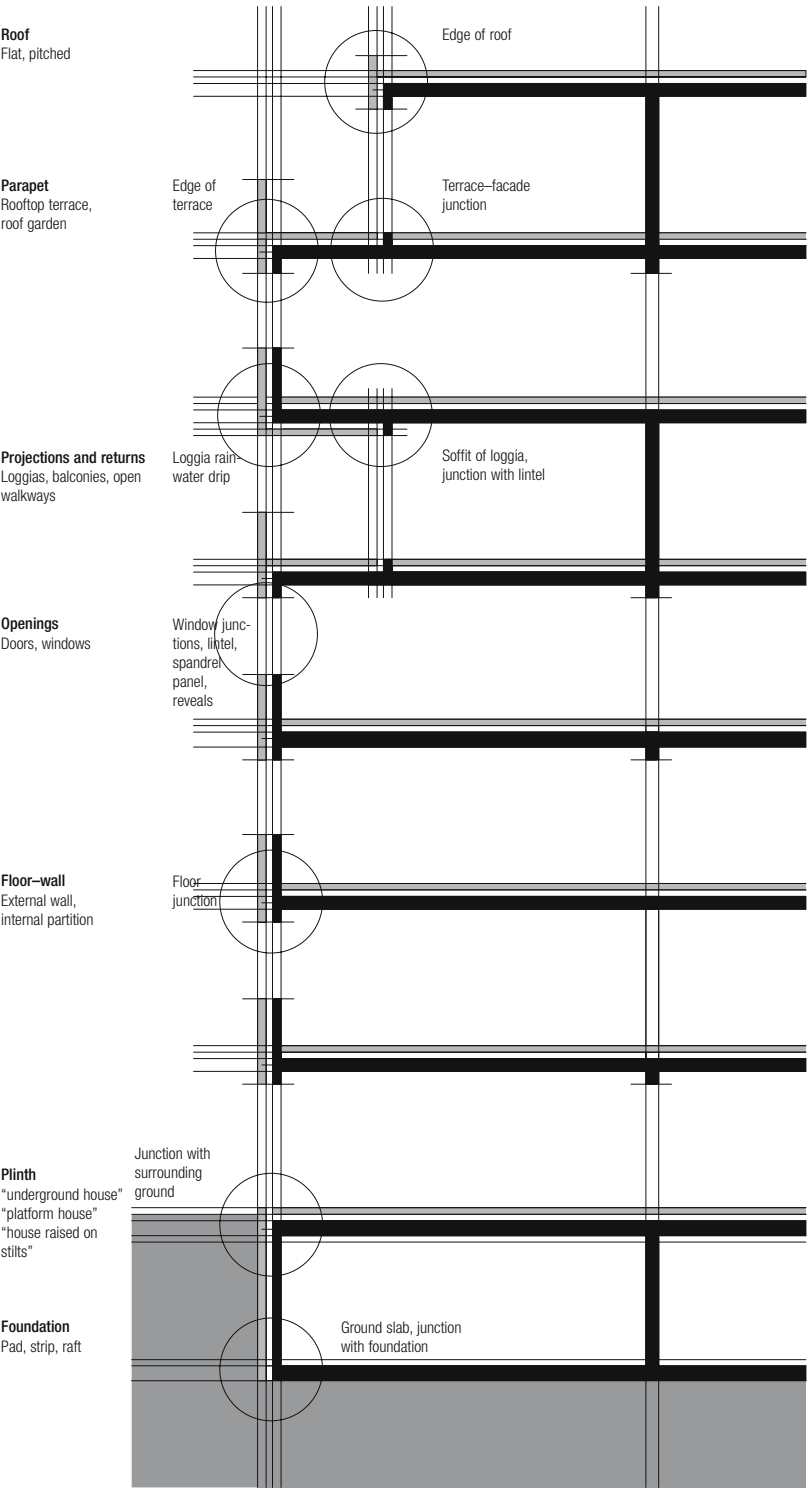


Fig. 14: Diagram of layers, loadbearing layer inside
The insulating layer continues uninterrupted as a "second leaf ". The circles designate the transitions where the different layers are joined together; these key details must be resolved in detailed drawings.

In this concept the loadbearing layer is exclusively on the "warm side", completely enclosed by the layer of insulation. The outermost layer serves, in the first place, to protect the insulation against mechanical damage and climatic effects and has no loadbearing function. Various materials may be used, from a thin layer of render to suspended stone slabs to facing brickwork or fair-face concrete. Accordingly, the thickness of the protective layer can vary considerably. Penetrations through the thermal insulation are confined to the fasteners for the insulating material and the external cladding or the ties attaching a self-supporting external leaf to the loadbearing layer. The ensuing thermal bridges are minimal.

Owing to the uninterrupted development of the insulation layer and the minimal thermal bridges, the "loadbearing layer inside" concept does not present any problems in terms of the building performance and is one of the most common facade arrangements. It is also frequently used in the refurbishment of uninsulated or poorly insulated buildings.

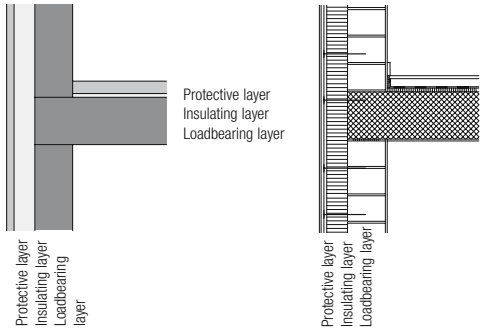


Diagram of principle **Construction detail**

Fig. 15: Case study: rendered external insulation, wall-floor junction
The protective layer consists of render applied to the insulation. This form of construction results in a thin wall but the protective layer provides little defence against mechanical damage, which can lead to problems around the plinth in particular (damage to the insulation caused by feet, vehicles, etc.).

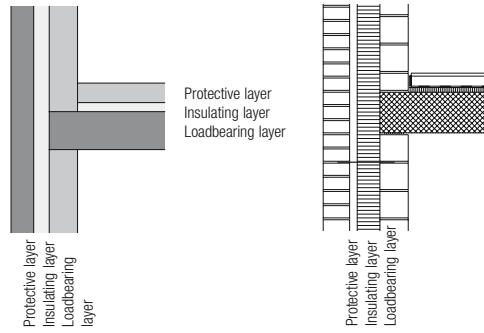


Diagram of principle **Construction detail**

Fig. 16: Case study: double-leaf masonry, wall-floor junction
The protective layer is realised as a self-supporting masonry leaf, e.g. using clay or calcium silicate bricks, and partial tying back to the loadbearing layer is necessary owing to the instability of the non-loadbearing external leaf in the case of multistorey buildings. The use of double-leaf masonry results in the thickest wall construction.