

Foundation methods

All exterior and load-bearing interior walls in brick-built and traditionally constructed (multi-storey) residential buildings are supporting. Moreover, the design and extent of the foundations are adapted to existing subsoil conditions.

Based on a rough division into firm and soft base, either strip foundations applied directly to the bottom of the construction pit or intermittent foundations are used.

In all circumstances, the bottom of the foundations must lie beneath the frost line, though this will always be the case for strip foundations where there is a basement level.

Strip foundations on a firm base are usually just a wider version of the wall above and made of the same material – i.e. masonry (sometimes masonry and natural stone) or concrete.

In the case of a softer base, the width of strip foundations is merely increased by an underlying structure of timber laid in one or more directions and finished off with a plank covering, upon which the wall is erected and stepped widthways (grillage foundation).

Beneath load-bearing interior walls, you sometimes come across one or more rows of (wooden) planks without crosswise connections laid in the longitudinal direction of the wall. In addition to increasing the load-bearing surface, the planks also serve to level the ground.

For stable layers at a deeper level, pile foundations are used, i.e. the driving-in of wooden and, later on, concrete piles.

A wooden structure similar to grillage is positioned above the piles. In some cases this horizontal wooden surface is replaced with a concrete casting.

The use of wood in the foundations requires that the water level always remain higher than the position of the wooden structure. Although this has always been known and observed, a later lowering of groundwater level has often resulted in damage.

The textbook literature from the second half of the 1800s lists more foundation methods than those mentioned here. It is to be assumed, however, that the use of such methods has been limited, principally because the costs associated with their application could not be accommodated within the financial restraints imposed upon (multi-storey) construction work.

Rising damp through foundations has been noted from early on, especially in connection with interior timber-frame walls or walls built from clay bricks.

This problem has been variously addressed by local legislation, often and more generally in connection with basement walls.

Slate, glass, asphalt board or similar is used for moisture-resistant layers.

Timber-frame walls are added to basements in exceptional cases only and when the interior (load-bearing) walls are constructed as foundation walls.

Note to illustration 1. "Building from the 1880s" in the Gallery:

It should be noted that no dimensions are present on the drawing other than those which give the building's overall scale, but the traditional foundation dimensions can be inferred from the drawing. From the early 1870s in Copenhagen, building assistants were employed to supervise and check building and foundation work, including the checking of subsoil conditions.

