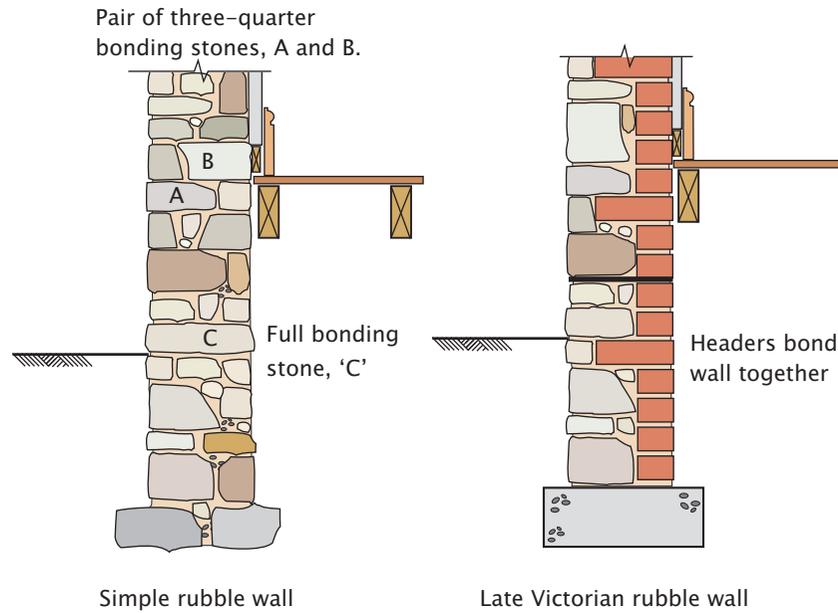
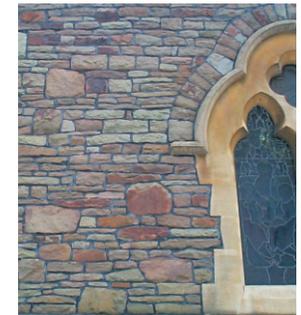


A Very Brief History of Walls

Cross section through two rubble walls

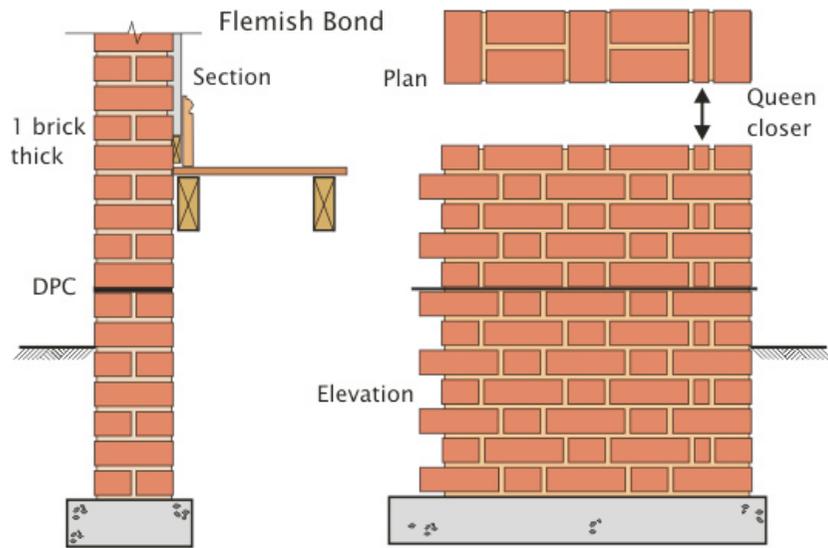


The picture above shows a rubble wall from Exmoor. It's laid in a weak lime mortar. The picture on the right shows a section through a rubble wall; copious amounts of mortar are required to fill all the gaps. The random rubble wall below (left) is an example from the south east. The one on the right is a Victorian Gothic example – technically a rubble wall but here every stone has been 'designed'.

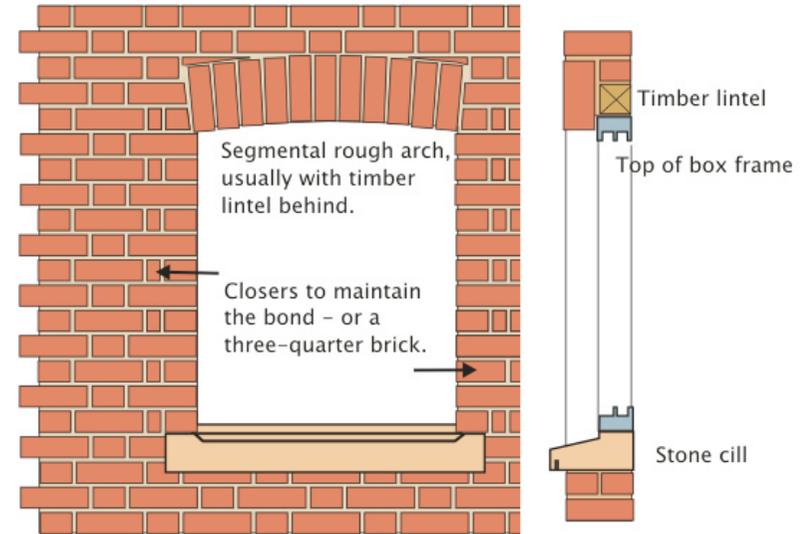


The pictures below shows two examples of squared rubble from central Wales. The picture on the left shows work which has been partly brought to courses – this is sometimes called snecked rubble. The example on the right shows rubble which is properly coursed.

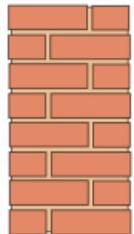




A typical opening in a 1 brick thick Flemish bond wall.



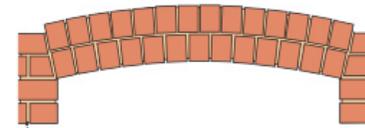
Section



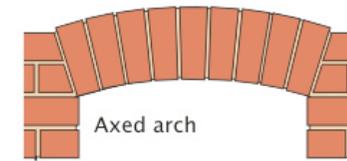
1.5 brick thick

Nearly all brick houses built before the 1920s were built in Flemish bond - or at least the walls on show to the street were. In this bond a single course of brickwork contains alternating headers and stretchers. Most two and three storey houses were built with walls 1 brick thick (see above example). Houses of more than three storeys usually had thicker walls. Flemish bond can easily be adapted to suit walls of 1-and-a-half-brick thick and 2 brick thick.

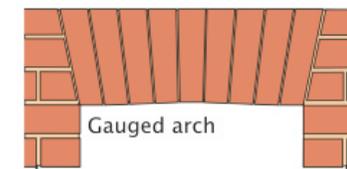
Arch formed in half-brick rings.



If snapped headers are used to form the arch the mortar joints are not quite as wide at the top. A typical segmental arch rises about 25mm for each 300mm of span.



If the bricks are tapered slightly the joint thickness can be maintained. Where the bricks have been roughly cut or shaped on site they are known as axed arches. Where soft bricks have been 'rubbed' to shape and where very fine joints have been used they are referred to as gauged arches. Axed and gauged arches can be curved or flat.



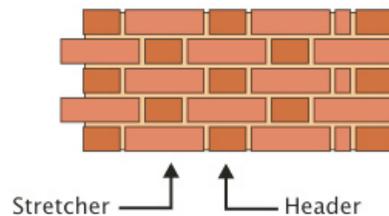
A rare but very fine example of a gauged ogee-shaped arch.

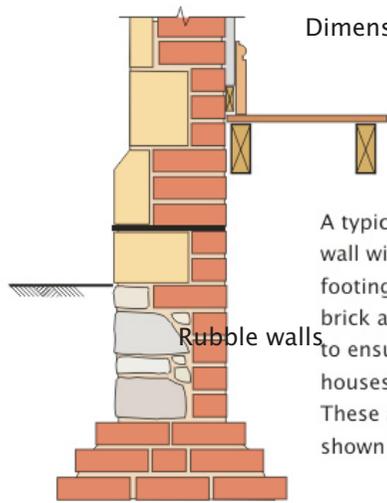


Header bond is fairly rare but it is an alternative to Flemish bond.



In Flemish bond it was not uncommon to find headers and stretchers in different colours.

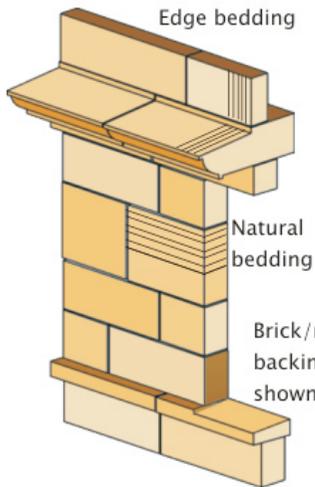




Dimensioned stone

Rubble walls

A typical late Victorian or Edwardian ashlar wall with a brick backing and a stepped footing. The two halves of the wall (ie the brick and the stone) must be well bonded to ensure stability and durability. In some houses the ashlar is secured by iron ties. These are less satisfactory than the method shown here.



Edge bedding

Natural bedding

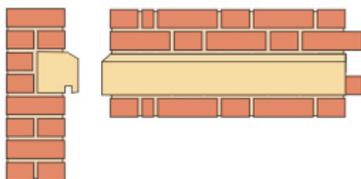
Brick/rubble backing not shown.

Sedimentary stones are 'laid down' over thousands of years. Where possible the stones should be bedded in the same plane as they were cut from the quarry. However, some exposed stones are more likely to weather if bedded this way.

The picture below shows a limestone quarry. This same quarry (Doulting) provided the stone for Wells Cathedral in the 13th century.

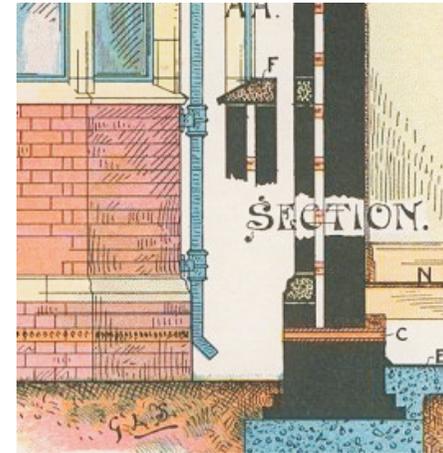


String course

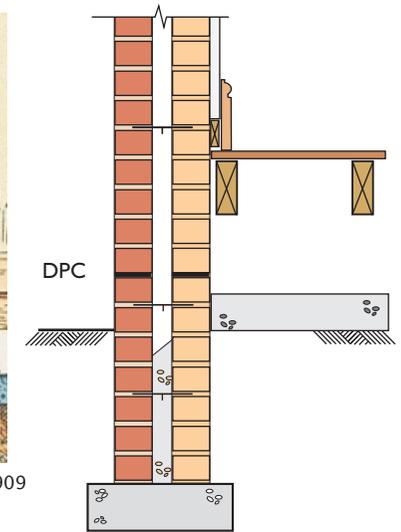


In humbler brick houses freestone window surrounds, cornices and string courses often add a bit of decoration to what, otherwise, might be a dull facade.

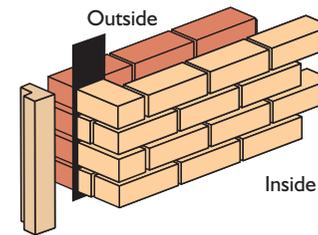
Early cavity walls



G Lister Sutcliffe, Modern House Construction, 1909

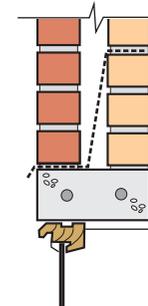


Some very early cavity walls (1890s) were built with a 1 brick thick internal wall (see above drawing). However, by the 1920s two half-brick leaves were the norm. Both leaves were usually laid in stretcher bond although, in some cases, the external leaf was laid in Flemish bond (with snapped headers).



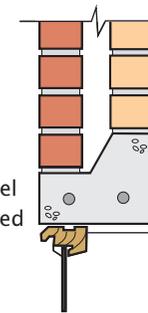
The vertical DPC prevents water from crossing into the internal leaf. Many early cavity walls (1920s) did not include vertical DPCs.

Lintels - 1930s to 1950s

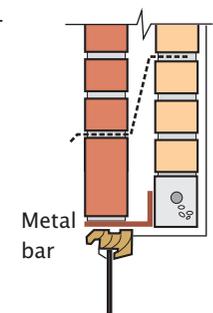


Cavity tray prevents damp penetration.

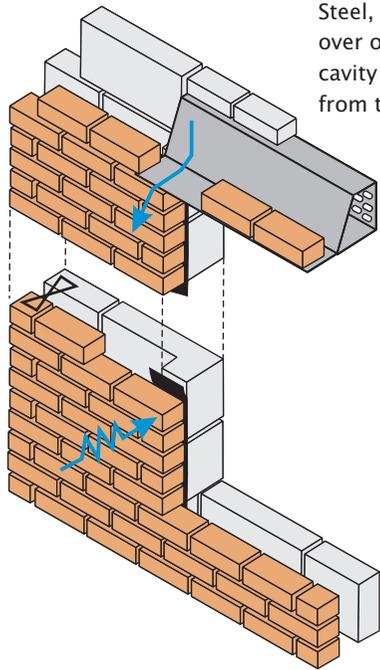
Concrete boot lintel with bitumen coated upper surface.



Brick on edge course over window.



1970s



Steel, box-section lintel carries loads over opening. The sloping face forms a cavity tray to direct any water away from the internal leaf.

Perforations on the back of the lintel provide a key for the plaster.



The frame is fixed to the external leaf of brickwork with cramps.

Modern walls



Insulation can be provided in a number of ways. Two are shown here: the one on the left is a foil faced 'bubble wrap', the one on the right polystyrene cavity boards.



Loads over windows and doors are normally carried by steel lintels (with integral insulation). The brickwork over openings is sometimes 'on edge' to provide a decorative feature. Notice the weep holes - to allow the escape of any water finding its way into the cavity.

Pointing



Bucket Handle



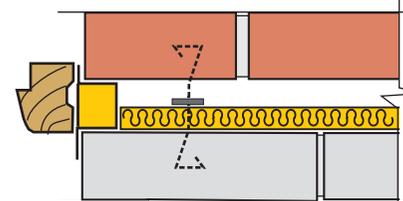
Flush



Recessed



Modern DPCs are usually made from polythene.



Vertical DPCs can still be used to separate the leaves. This plastic, extruded insulation strip is another option.