CHAPTER 11

Bricklaying

BRICKLAYING

Preparing a Gauge Rod

Before any bricklaying can be done it is necessary to prepare a gauge rod. This bricklayer's aid, when used, ensures that all the corners of a structure are of equal height on completion.

A gauge rod comprises of a planed piece of timber equal in height to the height of a single storey wall, e.g. 2.7m, onto which marks of equal spacing are brought on. The dimensions between the marks represent the average thickness of a brick, plus the thickness of a mortar joint.

Method

Take a random sample of, say, 6 bricks from the bricks on the building site. Measure the thickness of each brick and write it down. Determine the average thickness by dividing the sum of the thicknesses of the bricks by six. Add to this the thickness of a mortar joint.

Example:

Say bricks measured come to -

71 mm	
72 mm	
73 mm	
71 mm	
74 mm	
72 mm	
433 mm	divided by 6
= 72 mm	average thickness
+ 15 mm	joint thickness
87 mm	

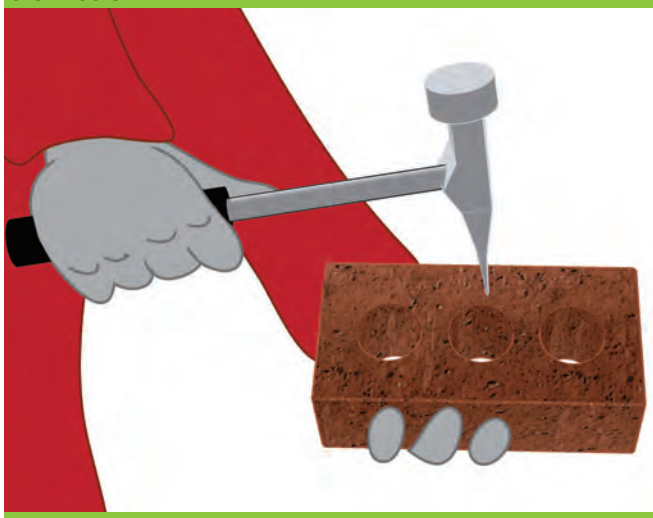
Mark off gauge rod at 87mm intervals.

Guide to Mortar joint size

- Generally for face brickwork a 12 mm joint thickness is the usual practice.
- Adjust the joint thickness of the backing plaster brickwork to match the same coursing height set out on the gauge rod.

Cutting the bricks

11.1- Queen closers may be cut by tapping the brick lightly all round with the sharp edge of a brick hammer. A final sharp blow on the header side will usually result in a clean split down the middle.



11.2 - Cutting a half brick with a brick-hammer.

11.3 - Cutting a three-quarter brick is done by tapping the brick in the required spot all round with the sharp edge (chisel point) of the brick hammer until it breaks.

11.4 - When cutting face-bricks greater accuracy is generally required than with the stock bricks (as the latter is normally plastered over). A bolster is used to ensure that the brick breaks at the desired point.

Buttering

11.5 - Mortar for the bed is picked up with a sideways motion of the trowel. The trowel should be filled with mortar then lifted and the mortar deposited firmly in position.

11.6 - Showing mortar bed slightly furrowed to make the placing of the brick easier to lay.

11.7 - Lifting enough mortar to butter a brick.

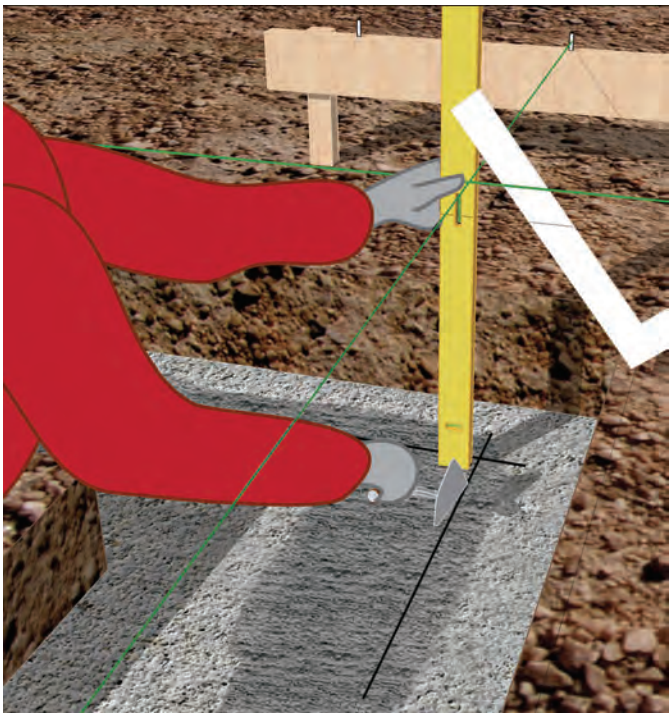
11.8 - Cover the ends completely with mortar to provide an adequate seal against rain penetration.

11.9 - A suggested method of carrying a number of bricks.

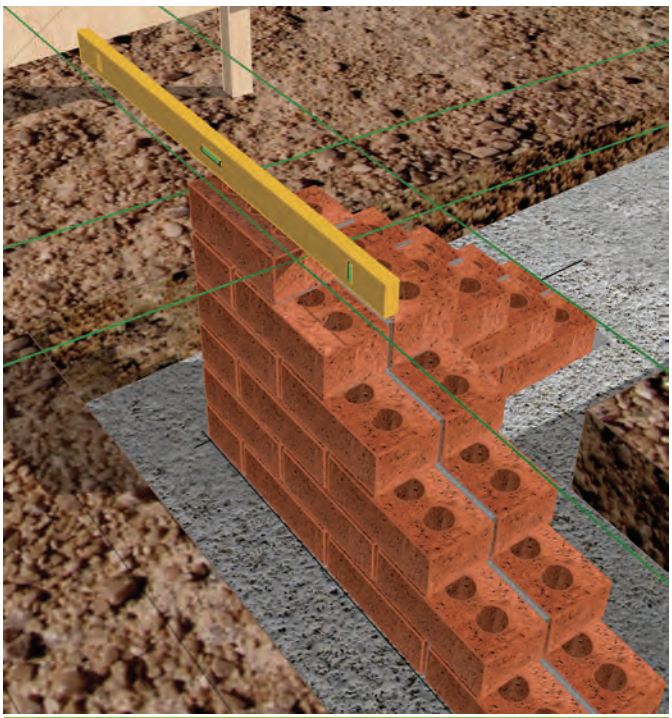
11.11 - After a second line is transferred down a little further along, the lines are joined using a level or straight edge.

Laying the bricks

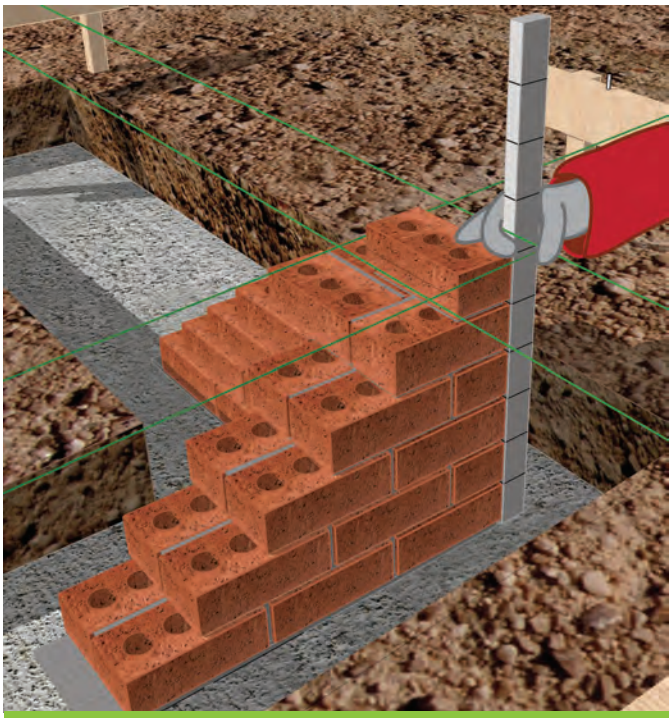
Leave the foundation concrete overnight before starting to build on it.



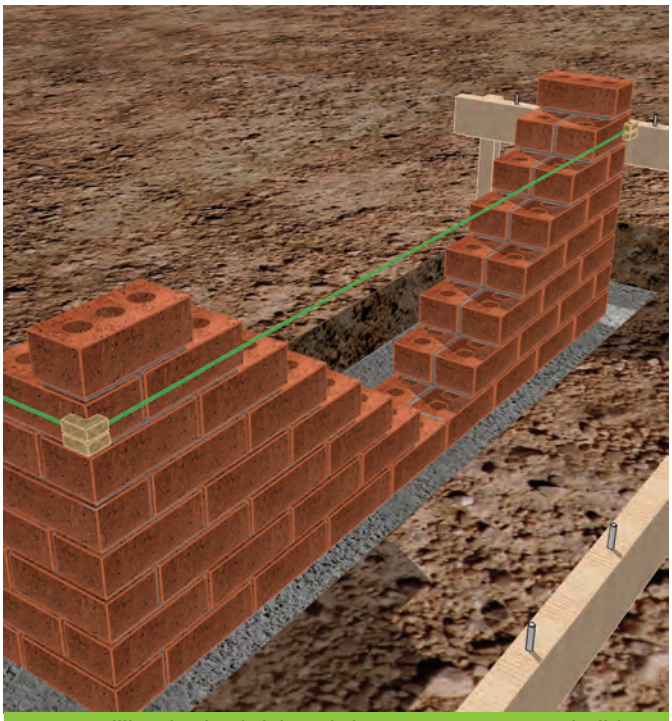
11.10 - Spread a thin layer of mortar on top of the foundation concrete and transfer the building line down as shown. Steady the level with the square.



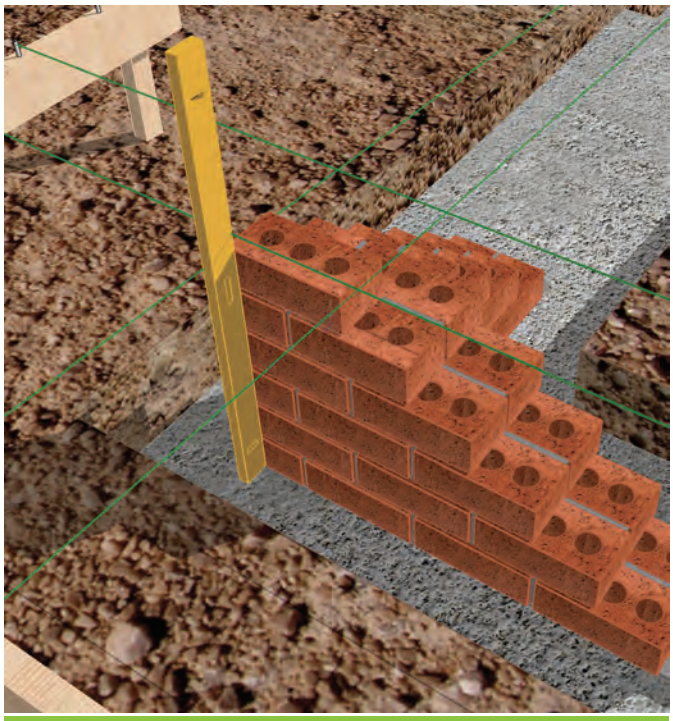
11.12 - When building a corner, the brick is pressed into position and levelled at-the same time. Excess mortar is cut off with the trowel held at an acute angle away from the face of the brick to prevent smearing the mortar and soiling the brick.



11.13 - Shows the gauge-rod being used to ensure that the top of the last brick placed in position lines up with the mark on the rod.



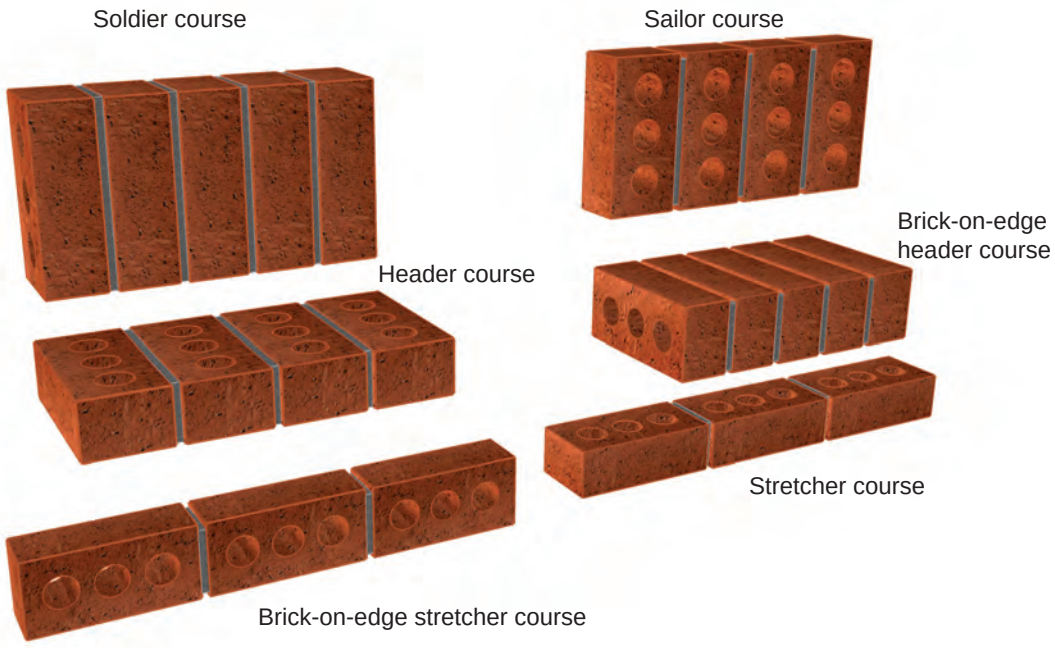
11.15 - Filling in the brickwork between corners, a builder's line and line-blocks or line-pins are used to ensure that each course is laid straight.



11.14 - Each corner brick is laid plumb. The brick must also be levelled crossways. When the corner is complete, all the bricks should touch the level as shown.

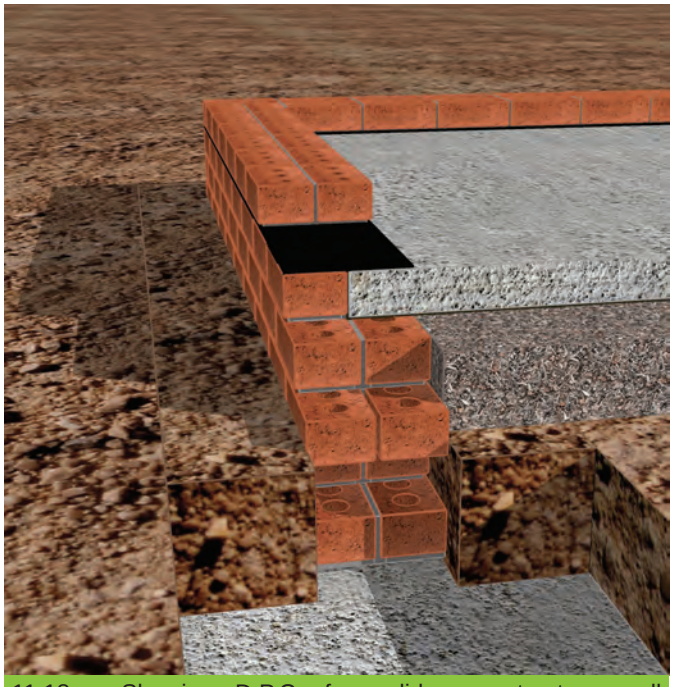
11.16 - Bricks are laid next to, but not touching the line, otherwise the line may be pushed out of position and the wall will not be built straight.

Different ways a brick can be laid

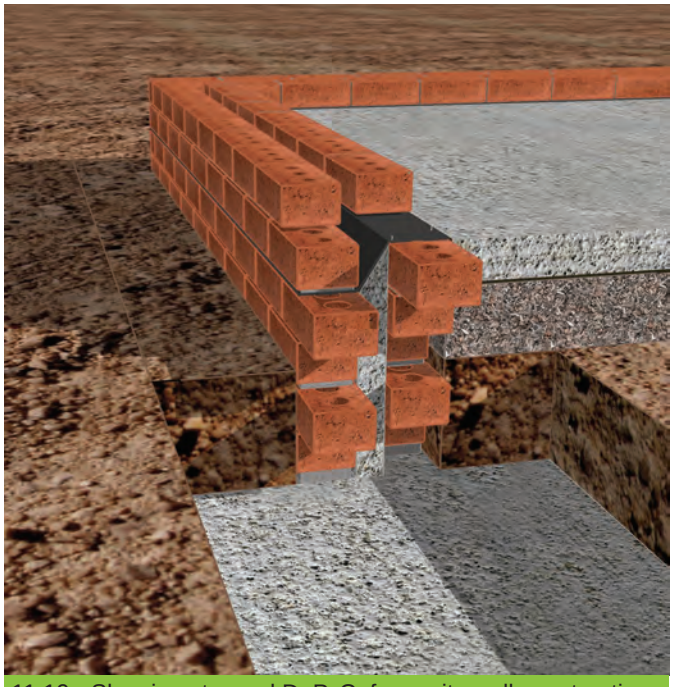


11.17 - Course terms

Damp-proofing of buildings



11.18 - Showing D.P.C. for solid superstructure wall construction.



11.19 - Showing stepped D. P. C. for cavity wall construction.

IMPORTANT NOTE:

Good building practice is to sandwich the DPC between two half thickness's of bedding mortar to ensure water tightness at this junction.

Damp proof courses

Damp proof courses (DPC) need to be installed to prevent moisture and water seepage through walls etc. DPC is a sheeting of impervious material; Mastic asphalt, bitumen polymer and fibre felt or embossed polyethylene pre-manufactured in rolls, to suit the different widths of brickwork, also available in different thicknesses known as microns (µm) with the most common being 375 µm.

The three basic methods of protection in which DPC courses are used, are:

i. To prevent moisture penetration from below (rising damp)
ii. To prevent moisture penetration from above
iii. To prevent moisture penetration from the side (horizontal entry)

Extracts from SANS 10400 part K on damp-proofing

Any wall or sleeper pier of a building shall be provided with damp proofing and vapour barrier installations in such positions and to an extent that will reliably protect the wall against rising damp and the interior of the building against ingress of moisture from abutting ground.

Any material used as a damp-proof course shall comply with the relevant requirements contained in SANS 248, SANS 298, or SANS 952, or be the subject of an Agrément certificate.

In a masonry wall, a damp-proof course shall be installed:

a. at the level of the top of a concrete floor slab resting on the ground; or
b. Where applicable, below any ground floor timber beam or joist.

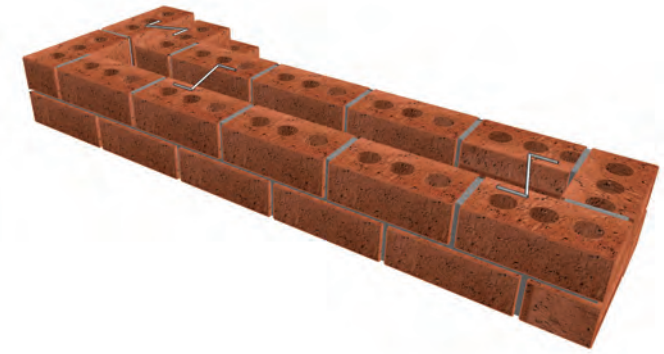
In the case of any masonry cavity wall

a. each leaf of such wall shall be provided with its own damp-proof course which shall extend over the full thickness of such leaf, in which case the cavity shall extend 150 mm below the damp-proof course; or
b. each leaf of such wall shall be covered by a membrane which extends across the cavity provided that the position of the membrane at the inner leaf is higher than its position at the outer leaf; and
c. Where necessary, weepholes to prevent build-up of water in the cavity shall be provided in the external leaf of every cavity wall, spaced not more than 1 m apart, in the masonry unit course immediately below the damp-proof course contemplated in (a) or in the masonry unit course immediately above the membrane contemplated in (b)

NOTE

A damp-proof course should not be installed in any freestanding wall. Where moisture is likely to be encountered from ground water, high-density masonry units with a water absorption not exceeding 7% should be used up to 150 mm above ground level in order to prevent rising damp.

Cavity Wall Construction



11.20 - Cavity wall

In certain parts of the country, like the high rainfall area along our coasts, it is advisable, if not mandatory through local building bylaws to install cavity walls on all external walls of a dwelling, that is, two skins or leaves of brickwork are built with a cavity between the leaves.

The width of the cavity is usually 50mm. The advantages of this type of construction are:

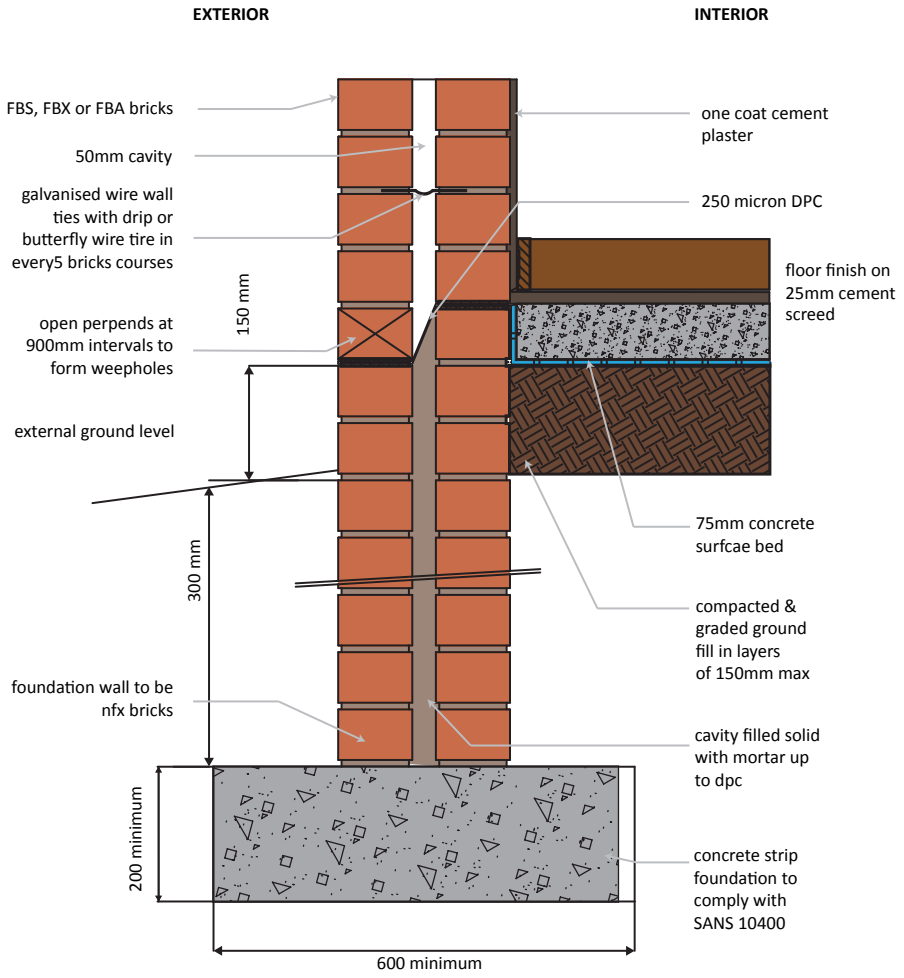
1. A dry interior is ensured - water cannot cross the cavity into the inner skin.
2. The enclosed airspace acts as insulation and ensures a more even temperature inside.
3. The inner leaf can be built with a different type of material.

There are also slight disadvantages:

i. A cavity wall occupies more space on the floor area - 50 mm is lost all round.
ii. Vermin and other insects may enter the cavity.
iii. Sealing of the cavity demands more labour and increases the cost.

Wall ties

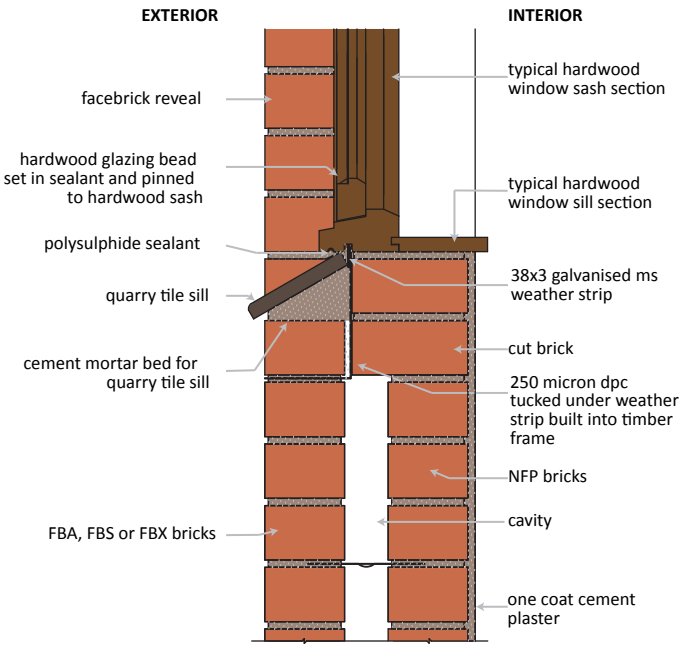
The National Building Regulations states that wall ties be installed in, and evenly distributed at 450 maximum at vertical centres and 600mm maximum horizontal centres.



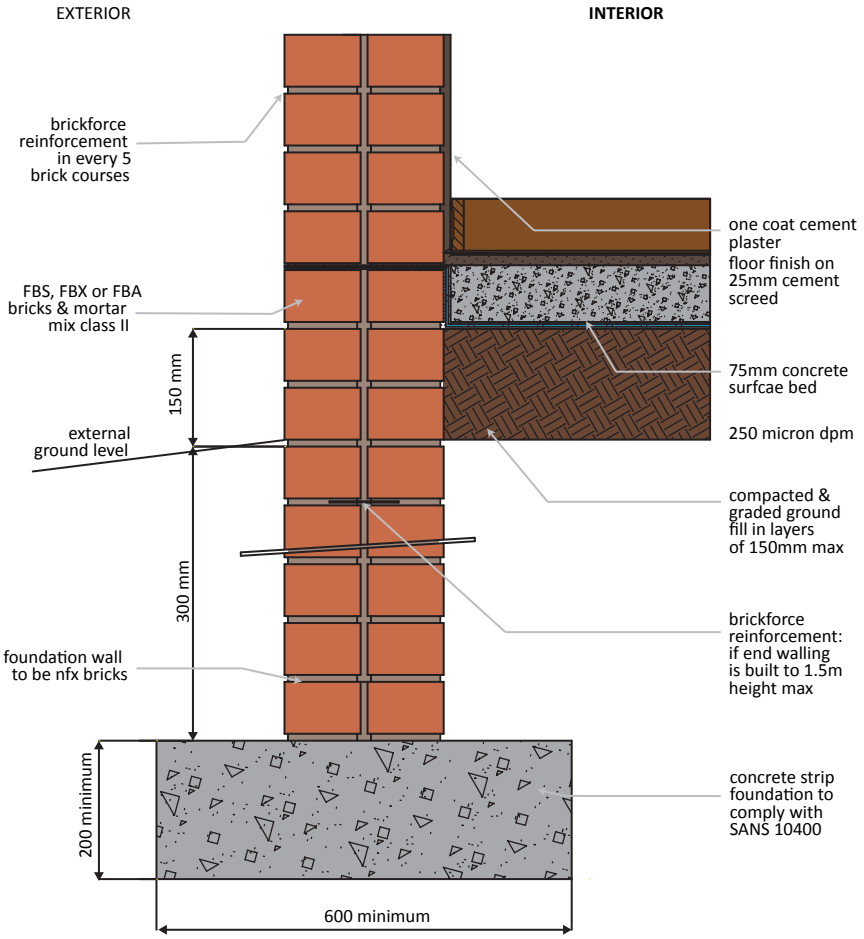
Wall Ties

- *Galvanised wall ties with drip or butterfly wall ties in accordance with SANS 28 to be used in cavity construction.*
- *In sea spray zones wall ties must be made from 816 stainless steel.*
- *Wall ties fixed at not more than 600 mm horizontal spacing and not more than 450 mm vertical spacing, approximates to 4 wall ties per m^2.*

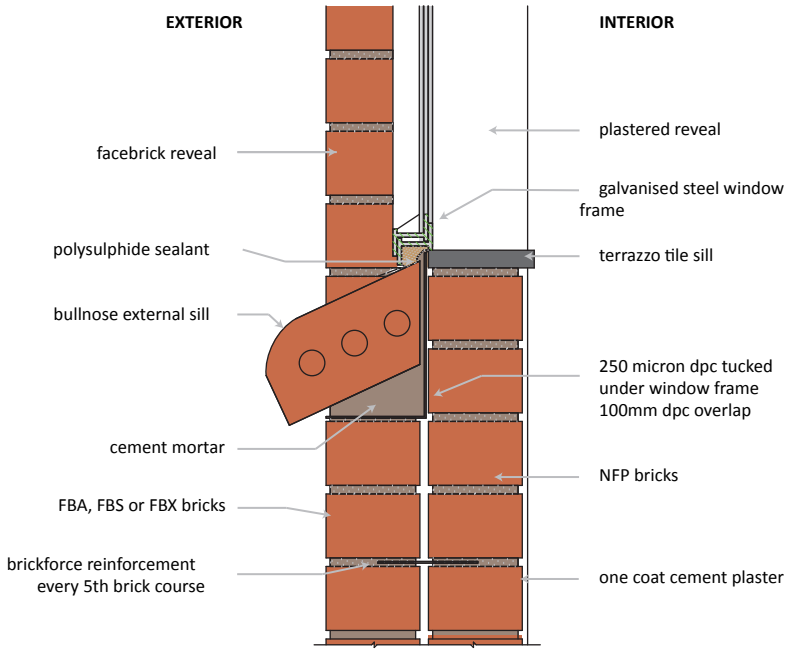
11.21- External brick cavtiy wall and surface bed junction



11.22 - Facebrick externally with timber window frame and quarry tile sill for cavity wall



11.23 - External brick wall and surface bed junction

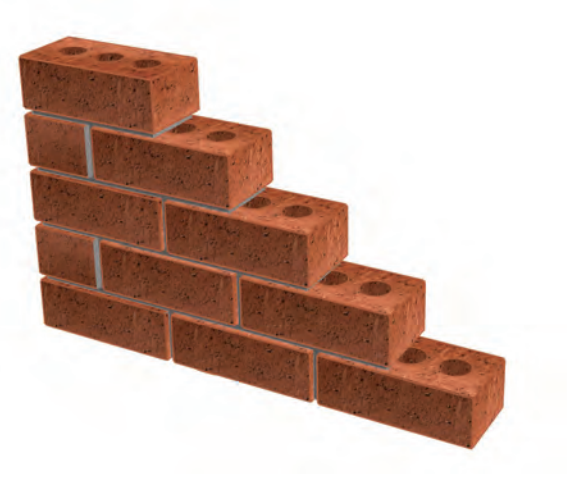


11.24 - Facebrick with sill externally for brick wall (steel window)

Cleaning the Cavity

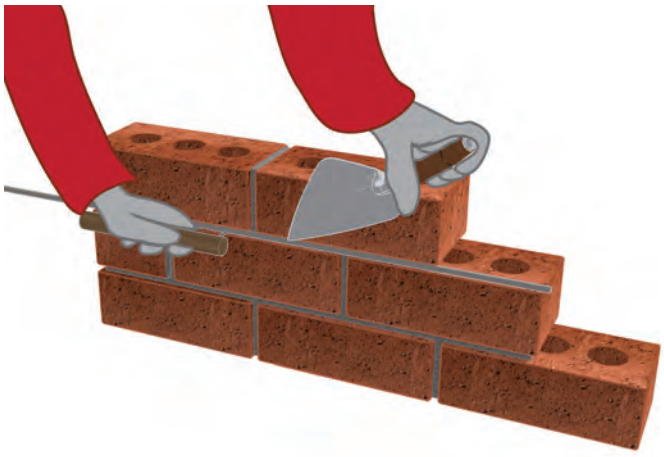
To safeguard against water penetration, certain precautions are necessary during the actual building of the cavity wall:

1. All openings must be sealed off.
2. D.P.C. must be stepped down to divert any water that may have penetrated the outer leaf to the outside.
3. The cavity must be kept clean of mortar droppings. The normal method of preventing mortar droppings from falling to the base of the cavity is to use a cloth-wrapped batten (38 x 38 mm). This batten is placed on the wall ties while building the wall. The batten is then raised by means of wire tied to its ends before the next row of wall ties is positioned.

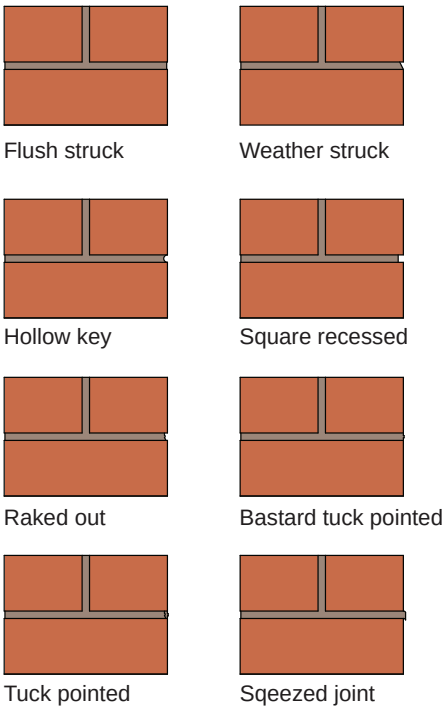


11.28 - Using a short key jointer to finish off the vertical joints.

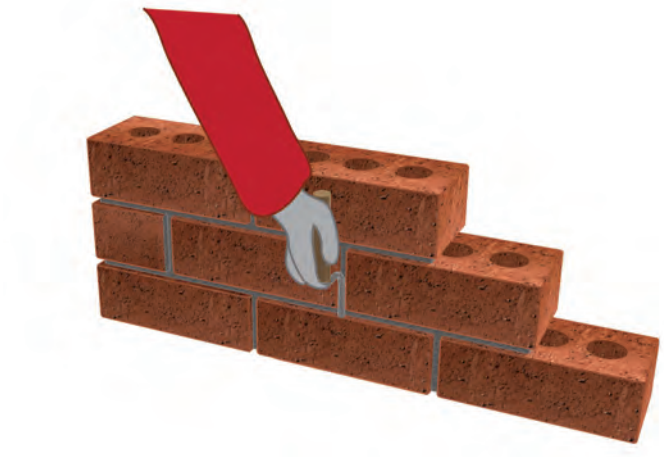
Jointing



11.26 - Jointing the bed in a corner with a key-jointer and at the same time using a trowel to clean off and polish the upper edge of the bed.



11.23 - Different ways to joint brickwork



11.27 - Using a short key jointer to finish off the vertical joints.

NOTE

For external face brickwork, particularly in coastal and high rainfall inland regions, a well polished hollow key horizontal and perpendicular joint profile is highly recommended.

NOTE

When jointing the bed joint, use the top edge of the bottom course to get a straight horizontal joint.