

# Technical: Setting out Brickwork

Designing and setting out brickwork correctly creates a matching and balanced appearance, particularly at reveals on either side of door and window openings and at the ends of walls.

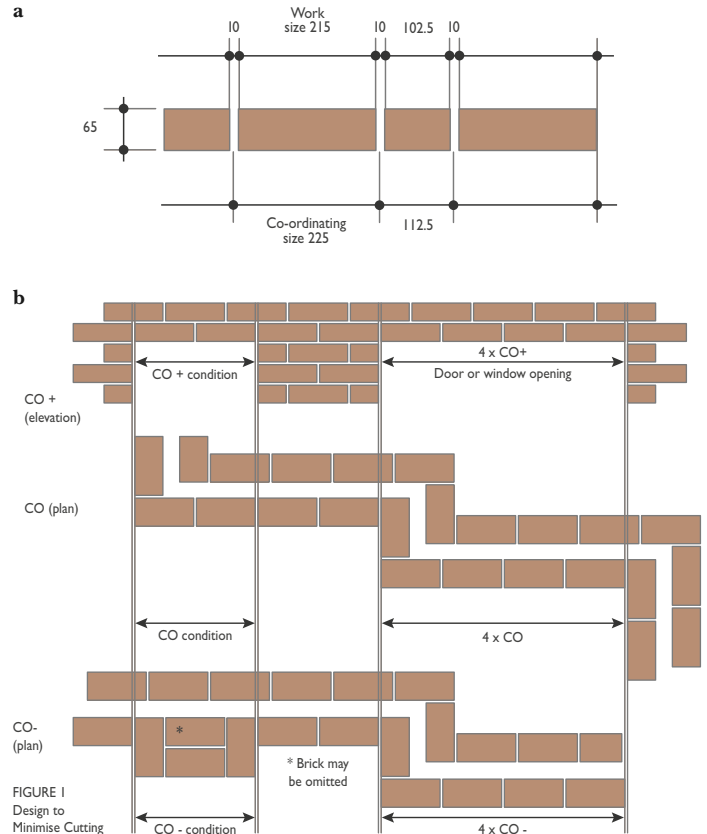
Setting out starts at the design stage where the design of a building, including openings, should ideally be set out to brick co-ordinating dimensions, eliminating the requirement to cut bricks on site.

In this briefing only stretcher bond, also known as half-bond, is considered, although the basic principles will apply whatever bond is used.

## DESIGN – Co-ordinating Size

Brickwork should be set out using as a 'unit' dimension the co-ordinating size of the brick, ie one brick length plus one nominal 10mm mortar joint – usually 225mm for standard metric bricks. The mortar joint acts as a 'buffer zone' and is adjusted to suit the actual brick size during construction. (a)

All brickwork dimensions are determined by one of three conditions: brick plus two joints (CO+) – brickwork above or below door and window openings; brick plus one joint (CO) – brick panel with opposite return ends; and brick only (CO-) – brick piers or panels between openings. For example, if a span of brickwork is required to encompass four whole bricks over an opening, a mortar joint will be needed at either end; therefore the co-ordinating size measurement (CO+ condition) is 900mm (four brick lengths plus four x10mm mortar joints). (b)



## Further Information

Comprehensive design and technical guidance for brickwork is available in the Technical Information Sheets section of Ibstock's website, under Design & Specification, Application & Construction and Site Practice & Troubleshooting. See: [www.ibstock.com](http://www.ibstock.com)

For any help or advice, contact Ibstock Design & Technical: [technical@ibstock.co.uk](mailto:technical@ibstock.co.uk)

## CONSTRUCTION

The bricklayer should set out the brickwork at foundation level, marking the position of openings and adjusting joints to accommodate any brick size variation.

## TOLERANCES

BS EN 771-1 requires that the dimensions of a clay masonry unit shall be declared by the manufacturer and also which tolerance category the mean values fulfil. Information on brick tolerances can be found in Ibstock's Product Portfolio and on its website.

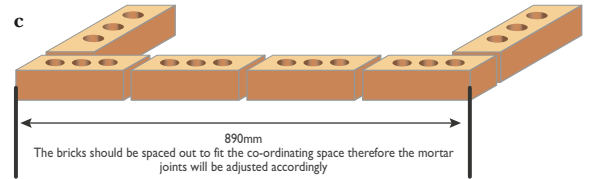
It is important to understand that bricks complying with the British Standard have varying shape characteristics, depending on the method of manufacture. When using different products in the same wall, for example wire-cut products at ground-level changing to stock bricks higher up, they may be classified to different tolerances. If the guidelines on setting out are followed this should not cause any problem. However, if a rigidly measured 10mm mortar joint is used there will be inevitable problems with perpends running out of plumb.

Before laying, units from each product type should be blended so that the overall appearance of the finished work is uniform and without patches or bands of colour. This will also help to blend any variations in size.

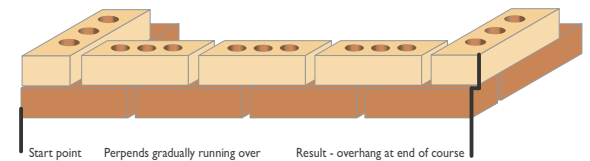
It is important not to set-out using the actual size of the bricks on site as the dimensions of future deliveries may differ. (c)

## PERPENDS

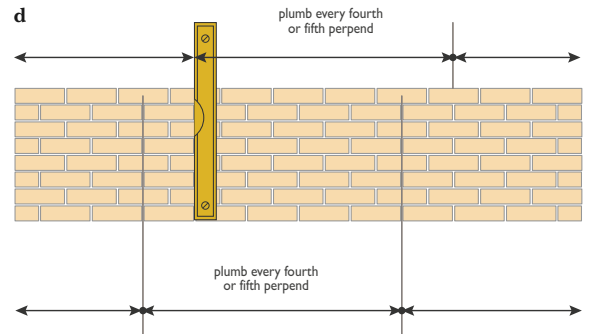
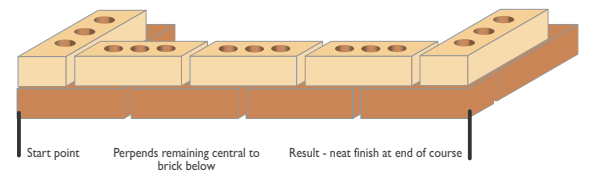
Perpends are the positions of vertical joints between the bricks (not the actual vertical joints themselves). Their location should be decided at foundation level. The verticality of perpends is visually important and the plumbing of every fourth or fifth course and the 'eyeing out' in between will produce satisfactory results. In addition, the fourth or fifth perpend in each course should be plumbed and suitably marked. (d)



Courses set-out with 10mm mortar joints



Courses set-out to a co-ordinating size with varying mortar joints



## REVEALS

The positions of the reveals, i.e. the sides of window and door openings, should be identified when setting out the first few courses. This should ensure unbroken perpend for the full height of the wall. (e)

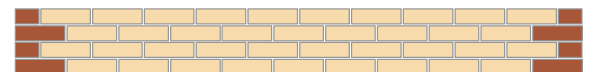
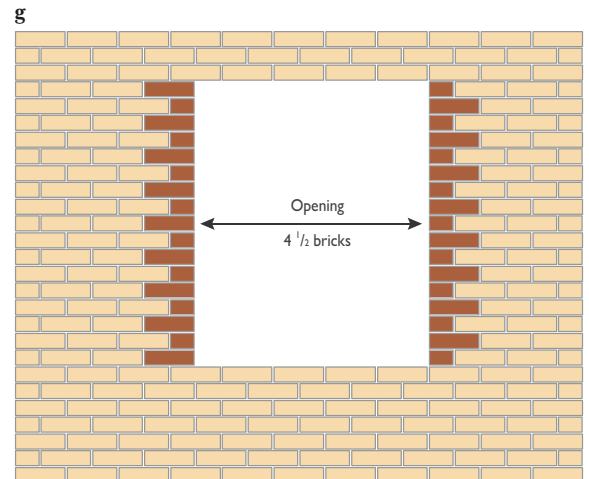
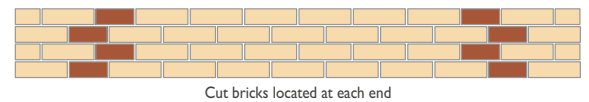
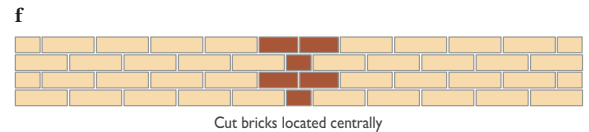
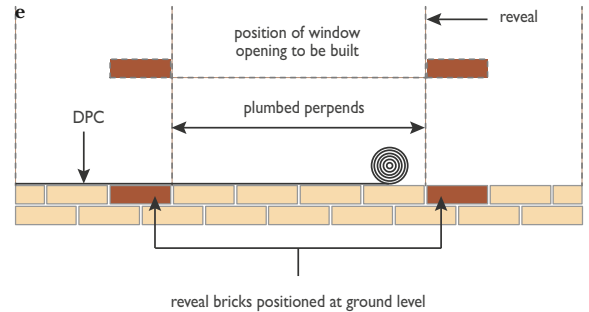
## BROKEN BOND

This is the introduction of cut bricks into a length of wall which, if properly considered, will maintain satisfactory appearance and achieve a minimum quarter bond. It tends to arise beneath window openings, where short lengths of brickwork are neither full-brick nor half-brick dimensions. Alternatively, the cut bricks can be placed symmetrically at each end of a run of brickwork. (f)

## REVERSE BOND

This is where the end bricks in a given course are showing a stretcher face at one end of the panel and a header face at the other.

It can also apply at either side of an opening containing a half-brick dimension in its width and where broken bond and brick cutting may be considered unacceptable. It is unlikely to be acceptable if reveal bricks of a contrasting colour are used as a decorative feature as the appearance is not balanced. (g)



## ANGLES

Walls which include angle bricks should be set out to the face side as with any facework. The use of squints will maintain half bond. Longer angle bricks (often referred to as dog-legs) will also maintain half-bond but the shorter ones will involve some cutting of the standard brick to maintain the bond. (h)

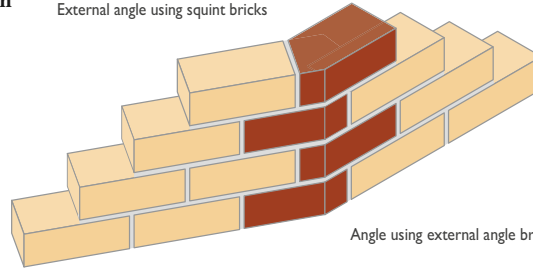
## PLINTHS

Stepped plinth courses at the base of a wall will increase the wall length externally and may result in a non-co-ordinating dimension. The setting out dimension should therefore be the brickwork above the plinth courses so that any cutting to accommodate the increased length is in the plinth and lower courses only. (i)

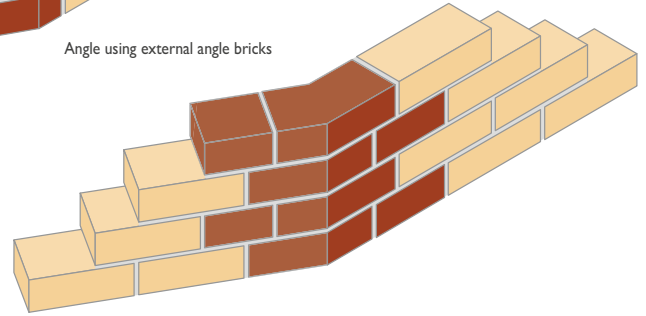
## COPINGS AND CAPPINGS

Special consideration must be given to fixing a line and pins when placing a course of copings or cappings. It is good practice to consider the most obvious 'sight line' or side most likely to be seen. As the bricks will vary in size the favoured edge or arris of the course being laid will be the 'trued up' edge. Where copings or capping are to be viewed from both sides, some selection of units to a common size will be necessary.

h External angle using squint bricks



Angle using external angle bricks



i

