

APPLICATION & CONSTRUCTION

SIMPLE FREE STANDING WALLS IN CLAY BRICKWORK

This leaflet highlights the basic requirements for long term stability, durability and safety of simple free standing walls constructed with clay bricks.

FOUNDATIONS & ALLOWABLE WALL HEIGHT FOUNDATIONS

Rules of Thumb - The foundation shown will be adequate in most cases. Changes to the diagrams shown must only be on the instruction of a Structural Engineer. For Foundations, a 1:2:4 mix (maximum aggregate size 20mm) will be strong enough in most cases (1 part cement - 2 parts sand - 4 parts aggregate).

CLAY BRICKS

All clay brick, from concrete footings upwards, should be type F2 (frost resistant).

Wall width must be a minimum 215mm.

Half brick thick walls (102mm) are not suitable.

Coping and cappings in clay masonry must be type F2 (frost resistant).

DAMP PROOFING

Water will migrate through jointed material such as brick on edge, concrete copings and creasing tiles, its passage must be halted by the incorporation of damp proof material. Damp proofing is the barrier to the passage of water and moisture into the body of the brickwork.

At Low Level, for stability use a minimum of 2 courses (150mm) of Ibstock Engineering Bricks of F2 durability in mortar designation (i).

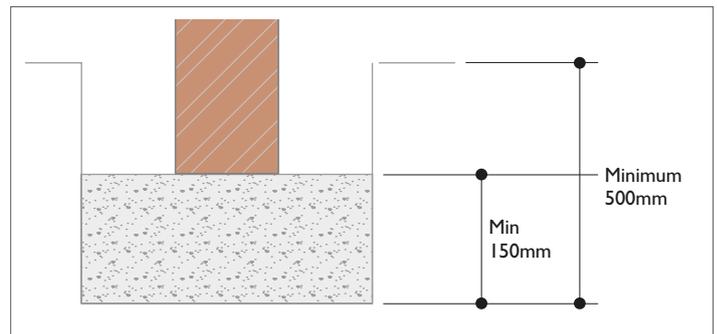
At High Level, always use a flexible damp proof course beneath coping and capping courses, which must be at least the width of the wall, be sandwiched within the mortar and have the ability to adhere to the mortar (use a high-bond bitumen polymer type DPC, i.e. Hyload Permabit). Polyethylene DPC's should be avoided as they do not bond with the mortar leaving the coping or capping susceptible to being displaced.

ALLOWABLE WALL HEIGHT

Maximum height for One Brick Thick Walls (215mm)

Wind Zone	Sheltered	Exposed
Zone 1	1925 mm 525 mm	1450 mm 600 mm
Zone 2	1750 mm 550 mm	1300 mm 625 mm
Zone 3	1600 mm 575 mm	1175 mm 650 mm
Zone 4	1450 mm 575 mm	1075 mm 650 mm

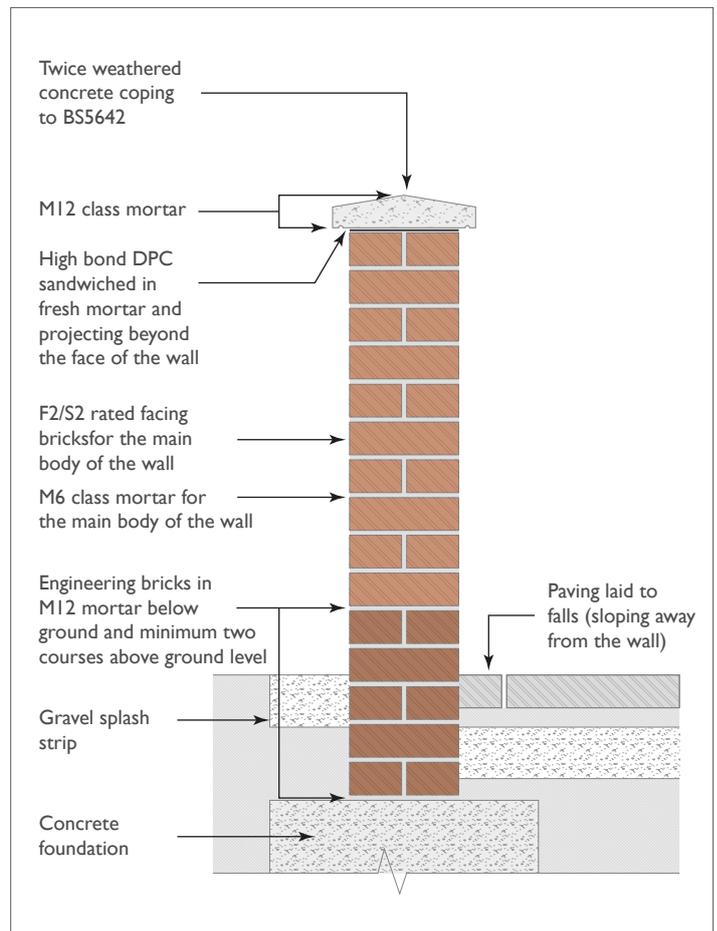
Source: BRE Good Building Guide No.14



Refer to allowable wall height diagram (drawings not to scale).

FREESTANDING GARDEN WALL

Up to 1.2m in height



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MORTAR

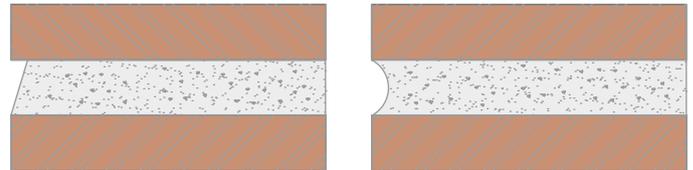
Mortar is just as exposed as the brick. Generally, and especially in the North West of England and Scotland, we strongly recommend mortar designation (i) throughout. The exception to this recommendation would apply to 'Stock' bricks for which designation (ii) should be used.

Fully fill all bed and perpend joints and lay frogged bricks with frog uppermost.

Designation (i)	Designation (ii)
1 part Portland Cement or equivalent	1 part Portland Cement or equivalent
¼ part Lime	½ part Lime
3 parts Sand	4 ½ parts Sand

Joint profile must be bucket handle or weather-struck; both well compressed and smoothed. Recessed joints are not recommended in any application subjected to severe weather exposure.

Water must not be allowed to pool on brick-on-edge applications.



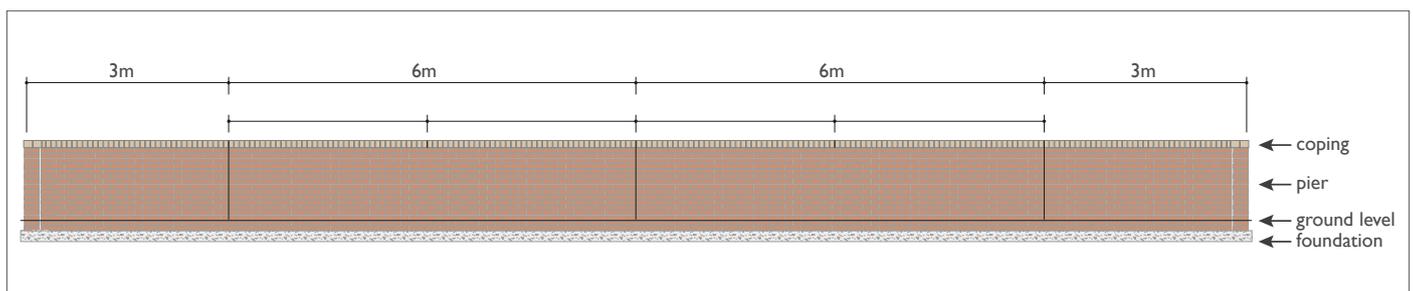
MOVEMENT JOINTS

All building materials move when subjected to temperature and moisture changes. Brickwork is no exception.

In freestanding walls, movement joints (often referred to as expansion joints) must be provided at a maximum of 6m spacing with a maximum 3m from a corner or change of direction.

They must commence at concrete foundation level and continue through the coping/capping courses.

Additional movement joints will be required at minimum 3m centres through the copings/cappings. A 10mm joint width will normally be sufficient. Use ties fitted with de-bonding sleeves to span the joint and maintain stability.



FILLERS AND SEALANTS

Filler materials should be compressible by easy pressure between finger and thumb and should recoil back to its original thickness when released. Cellular polyethylene and cellular polyurethane are ideal. Impregnated fibre boards should not be used with clay brick as they do not compress easily and will restrict expansion. The filler material should be installed as the brickwork is built, keeping it back from the face of brickwork by 10mm to allow for a 10 x 10mm recess for the sealant. The sealant should be a polysulfide or low modulus silicone.

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COPINGS AND CAPPINGS

If not properly constructed water will ingress the brickwork structure via the mortar joints in this course compromising its long-term durability.

Clay brick copings and cappings must always be F2 (frost resistant), preferably with an overhang and drip groove for the ability to shed water. This is particularly important for walls constructed in areas rated as severe or very severe exposure to wind driven rain such as Scotland, Wales and the north and south west of England.

A flexible (roll type) high bond bitumen polymer DPC must always be provided and sandwiched in the mortar beneath this course. The Ibstock patent 'Caplock' system will provide additional security, particularly in areas where vandalism is prevalent.

Forticrete stone or Supreme concrete copings are also ideal available in profiles to assist in shedding water.

Brick on edge cappings are not recommended, particularly in areas of severe exposure to wind driven rain.

PIERS

Maintaining stability is essential for long term safety in use. It is advisable to incorporate a pier at the ends of most walls.

Generally a pier 327mm x 327mm on plan will be adequate for hanging a 1.2m high x 800mm wide gate.

It is likely that walls over 1.5m high will require intermediate stiffening piers along its length. For walls exceeding this height always check with a Structural Engineer.

In Scotland, a free standing wall exceeding 1200mm visible height may require building control approval. Please check with your local building control office before commencing any building operations.

Summary of **Do's** and **Don'ts** when constructing free-standing walls

Do;

- Use a DPC below the capping/coping and sandwich the DPC in mortar
- Use the correct mortar mix
- Build in the movement joints
- Use bucket handle mortar jointing

Do not;

- Use recessed mortar jointing
- Use coatings or waterproofing agents other than where indicated
- Clean brickwork with high pressure water washers
- Use bricks for treads or risers in step construction, pavers or path edging

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