



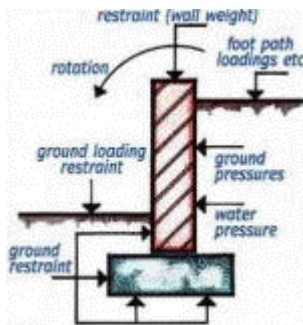
Simple Retaining Walls in Clay Brickwork

Many simple Free-standing walls, particularly those in and around the garden, will be acting as retaining walls to footpaths, planting, grassed areas and where there are changes of level, not least where these adjoin a neighbour's property.

1. Foundations

Where level differences are substantial or other buildings will be close by, professional guidance should be obtained

Remember what is not seen is just as important as what is



Forces Affecting a Retaining Wall

| Height of Wall | Foundation Width |
|----------------|------------------|
| 300 | 400 |
| 500 | 450 |
| 800 | 500 |
| 1000 | 600 |

Concrete foundations should be a minimum of 500mm below the lower ground level and at least 275mm thick. 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)

2. Height and Thickness

A minimum thickness should be 215mm of bonded construction or two separate brick skins tied together (see reinforcement). This will suffice in most cases where the ground level difference does not exceed one metre and where ground and water pressures are minimal.

3. Clay Bricks

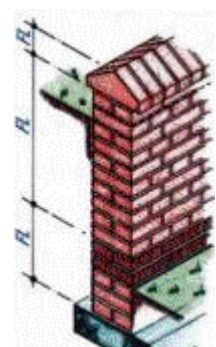
Remember appearance and durability is what is to be achieved

All clay bricks should be F (frost resistant quality) to ensure long term durability. Perforated bricks will provide more interlock and produce a stronger wall. Mortar jointing should be bucket handle or weatherstruck.

4. Mortars

Remember that the mortar is exposed just as much as the brick

The high durability mortar mix shown in mix 2 is normally suitable for all levels in the wall. In very wet locations consider mortar mix 1 below ground level dpc and for



copings and cappings. Fully fill all bed and cross joints and lay frogged bricks with frog uppermost.

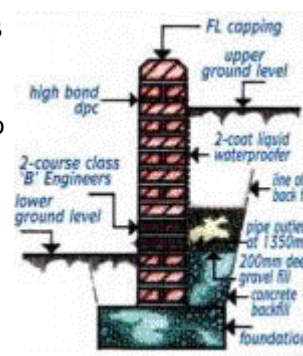
| Mix 1 | Mix 2 |
|----------------------|----------------------|
| 1 pt Portland Cement | 1 pt Portland Cement |
| ¼ part Lime | ½ part Lime |
| 3 parts Sand | 4½ parts Sand |

5. Damp Proof Courses & Waterproofing

Remember - dpc's are barriers to the passage of water and moisture.

For greater stability use a minimum 2 courses (150mm) of Ibstock Class B Engineering Bricks to FL quality at the lower level. Always use a dpc beneath coping and capping courses which must be at least the width of the wall, and sandwiched within the mortar and have the ability to adhere to it (high bond).

For continued long term durability and appearance, the faces of retaining brickwork in contact with all soils and clays must be protected with a minimum 2 coats of proprietary liquid waterproofer or a self adhesive membrane.



6. Drainage

Remember - ground water can exert considerable pressure.

Water accumulating behind retaining walls and exerting pressure, must be released. A gravel trench and small 38 or 50mm plastic pipes through the wall will normally suffice.

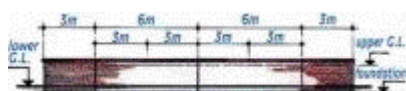
Note: Leaving open perp. joints to release collected water can lead to localised wall saturation, with resultant staining and maybe an effect on the long term durability.

7. Movement Joints

Remember - All building materials move when subjected to temperature and moisture changes. Brick is no exception.

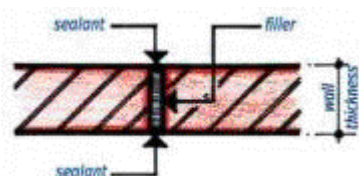
Movement joints (often referred to as expansion joints) must be provided at a maximum 6m spacing with a maximum 3m from a corner or change of direction.

They must commence at concrete foundation level and continue through the coping/cappings. Additional movement joints will be necessary through the coping/cappings. A 10mm joint width will normally be sufficient.



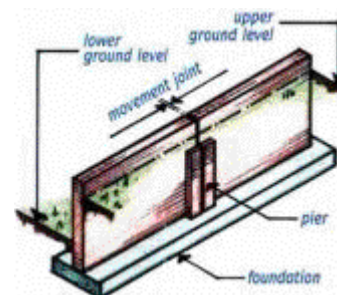
8. Fillers and Sealants

Remember - filler materials should be compressible by easy pressure between finger and thumb.



Cellular polyethylene and cellular polyurethane are ideal. Impregnated fibre boards should not be used. The sealant will be a polysulphide or low modulus silicone.

To increase stability at the movement joint position, piers can be built at either side as shown.



9. Copings and Cappings

Remember - that this is where the water will ingress the brickwork if precautions are not taken.

Clay brick copings and cappings must always be of F (frost resistant), preferably with an overhang and have the ability to shed water. A flexible (roll type) high bond dpc should always be provided and sandwiched in the mortar. The Ibstock patent 'Caplock' system will provide additional security, particularly in areas where vandalism is prevalent.

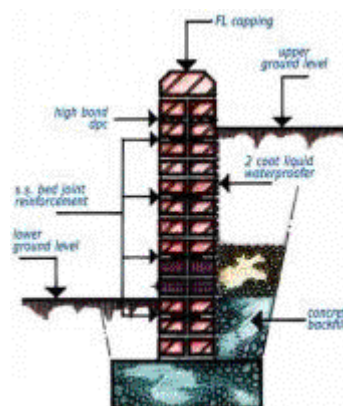
(See also [Simple Freestanding Walls](#)).

10. Reinforcement - Bed Joint Type

Remember - untied walls of two separate skins are unlikely to perform satisfactorily

Where the wall is constructed of two separate brick skins in stretcher bond, they will require tying together.

Stainless steel bed-joint reinforcements every third course will achieve this and greatly enhance the walls strength.



11. Reinforcement - Pocket Wall Construction

Additional strength and stability can be obtained by introducing reinforced concrete pockets into the construction. This is achieved by casting into the concrete foundation 10 or 12mm diameter mild steel reinforcing bars which are accommodated within a vertical slot formed in the rear skin of the wall.

When a suitable height is reached a temporary shutter-board completes the box which is filled with well compacted concrete.

Remember to remove all mortar droppings from the bottom of the pocket before placing the shuttering and pouring the concrete.

