

# Good Site Practice Guidance

Facing Brick



# GOOD SITE PRACTICE GUIDANCE

## Facing Brick

### DELIVERY

Our various AG Sales Offices can advise on load and pack sizes, weights and delivery methods. Please advise the office of any special delivery requirements, site restrictions or time windows which are applicable at the time of ordering and before deliveries commence.

### STORAGE AND HANDLING

To avoid contamination and staining, it is important to store bricks properly by keeping them raised above damp or muddy ground.

While being used on site, bricks should also be kept close to the points of work to reduce unnecessary handling as this will minimise damage and waste.

It is vital to protect bricks from the weather during construction, including the covering of completed but uncapped brickwork.

Waterproof coverings will allow circulation of air and will reduce the risk of lime bloom, shrinkage and movement.

Any materials used in conjunction with concrete facing bricks should also be stored under protection.

Transporting bricks on site through mechanical methods will also reduce damage and waste.

It is important to lift and place facing bricks which should never be thrown or tipped.

To ensure an even finish, bricks should be selected from three packs to allow for mixing loads.

### LAYING, BEDDING AND JOINTING

Brick laying with AG bricks should be consistent with the experience of working with any other masonry product and be handled in the same manner as dense concrete blocks, reconstructed or natural stone.

The dimensional accuracy dimensions and size consistency facilitate the smooth laying and maintenance of brick courses.

Between 15 and 20 courses should be achievable per day so long as bricks are dry and mortar consistency is correct.

In keeping with BS 8000-3 standards, the height of lifts should not be more than 1.5 metres or 20 courses per day.

Frogged bricks should be laid frog up. Also please ensure bricks are not wetted before laying.

Always check the workability of the mortar and adjust to suit the weight and suction of the bricks.

AG bricks have a low to medium absorption and tend to shed water towards the mortar joints.

To prevent excessive water ingress into the cavity, you should ensure the perpend joints (vertical joints between blocks or bricks that have been laid in a horizontal course to form a wall) are correctly filled.

Leave the mortar to harden slightly before forming the specified joint.

To compact the joints, improve weather resistance and reduce shrinkage in the mortar it is recommended that you use tooling.

Also, in areas of high exposure avoid recessed or flush pointing.

Bricks should not be laid when the temperature is at or below 3°C or when there is a risk of freezing after the mortar has hardened.

Wall ties should be placed at normal locations, but additional ties are recommended around movement joints.

They should be positioned within 225mm either side of the opening or joint and at vertical centres not exceeding 300mm.

Alternatively, flat ties may be inserted across the joint provided one end of the tie is unbonded.

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### BED JOINT REINFORCEMENT

Stresses within the brickwork can be controlled by bed joint reinforcement which is also advised for extending the distances between movement joints. While a ladder type reinforcement is preferable, we advise that it is best to consult an approved engineer.

### BONDING

Ensure that bonding patterns are maintained at openings as broken bonds can increase the risk of cracking. Where special details are required at openings, AG can supply a full range of standard or bespoke special bricks to suit each design.

### CAVITIES

Ensure that both leaves of a cavity wall rise simultaneously and keep cavities clean at all times to reduce the risk of cold bridging or water reaching the inner leaf. When using cavity trays over openings, they should incorporate stop ends to prevent water over-run during severe weather.

### WEEP HOLES

In areas where there is extensive bridging of the cavity e.g. at lintels and floor slabs, weep holes should be created and placed at every third perpend.

### WALL TIES

Wall ties should be selected in accordance with PD 6697: 2010, Section 6.2.

Wall ties should be incorporated into both leaves at a depth of at least 50mm with the drip located centrally within the cavity and facing downwards.

To prevent any tracking of moisture towards any partial cavity insulation or the inner leaf, ties should fall towards the outer leaf.

The density of ties (number of ties per square metre) should be in accordance with BS EN 1996-1-1: 2005.

Ensure they are evenly distributed, except around openings where, at vertical edges (for example movement joints), additional ties should be used at a rate of one tie per 300mm height. These should be placed no further than 225mm from the edge.

### DAMP PROOF COURSES

Materials for damp proof courses should conform to the relevant British Standard referenced in Table 1 of PD 6697: 2010.

The material must be of the correct width so that it fully covers the leaf thickness and be fully bedded in mortar with an overlap of at least 150mm.

If a slip plane is required, two layers of joint material may be laid on top of each other, the effectiveness of which will depend on the type of material used and the loads imposed upon it. Refer to manufacturers' guidelines for further advice.

If a slip plane is necessary, other means of maintaining structural stability, such as extra wall ties, should be used.

### MORTAR

A 1:1:6 or equivalent mortar is adequate for most locations.

We would however recommend lime-enhanced mortars as they are able to cope with small degrees of movement.

It also allows the location of movement joints to be at 7.5-9 metre centres, depending on window openings and other factors.

The mortar's workability however should be adjusted to suit the density and absorption of the brick and in some cases approved admixtures can help with this.

If using retarded or silo-based mortars refer to the suppliers' recommendations.

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### CUTTING AND CHASING

Cutting can be carried out by bolster, mechanical saw or hydraulic guillotine.

It is vital when doing facing work that mechanical means are used to preserve a true arris.

While wet cutting will help to maintain the appearance of the bricks, make sure they are hosed down immediately after cutting and then dried before laying.

Vertical chases should not exceed one-third of the thickness of the wall while horizontal chasing should not be deeper than one-sixth of the wall.

When using mechanical means, it is advisable to also use timber laths as guides.

For safety, always ensure goggles and dust masks are used when chasing concrete bricks.

### BRICK FINISHES

With so many different finishes the choice of brick can have a big impact on the final appearance of the brickwork.

Some things to consider include:

- AG bricks have two finished faces and can be laid with either stretcher facing out.
- Sample panels of between 1 to 1.5 square metres will help determine the overall finish and for best results view the panels from a distance of at least 3 metres. The brickwork should be examined as a whole, rather than just viewing individual bricks.
- While some degree of damage may be inevitable on an individual brick most are required to be reasonably free from deep or extensive cracks and damage to edges and corners.
- However, it is generally accepted that all facing bricks may have some form of chipping. The accepted industry standard is that no chip should be greater than 15mm.
- An added benefit of AG bricks is that they are through coloured and hence any chips may be less apparent than an applied face brick.

### MOVEMENT CONTROL

General movement control measures should be indicated on the designer's drawings and if not, this should be discussed with the designer before work starts.

AG's recommendations, derived from those given in BS 5628-3 and PD 6697, together with the experience of the technical and performance characteristics of the product, are detailed as follows.

- Ensure that bricks are kept as dry as possible while storing and stacking out on site. Bricks should not be wetted before laying and incomplete brickwork should be protected from rain and snow.
- Always use the correct grade of mortar. An M4 Class mortar is generally most appropriate. Stronger mixes which utilise a CEM I rather than a CEM II cement, may not accommodate movement as well.
- For buildings which are two storeys and above, movement joint centres of between 7.5 to 9 metres should be used. Shorter distances may be needed for single storey buildings. The length/height ratios of brickwork panels should not exceed 3:1.
- Particular care should be taken with openings greater than 1.5 metres, especially if they are placed directly above each other.

An example is the panel profile between a ground floor opening and a first floor window which may be less than 3:1. As they are relatively slender they can be subject to stresses from larger areas of brickwork adjacent to the openings. This requires lattice type bed joint reinforcement above the ground floor opening and below the first floor window. However, it is worth noting that whilst bed joint reinforcement will assist in the prevention of potential cracking, it is not a complete alternative to the provision of movement joints which should be installed in the appropriate locations.

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- For openings where there are only a few courses of bricks above or below use crack inducers, in the form of raked joints which have been filled with mastic, at the ends of the openings.
- When using concrete bricks, a large proportion of movement joints can be simple contraction joints. However south facing elevations, particularly those built with dark coloured bricks, may require full compressible joints to accommodate thermal movement.
- For elevations which consist of block and render and concrete bricks, any movement joints should follow through both materials.
- Movement joints at short returns can frequently be installed as butt joints incorporated into the corner, with the longer leg abutting the shorter return.
- Placing vertical movement joints in locations where lateral support from party walls or internal load bearing partitions exist will assist in the stability and resistance to wind loading.
- Avoid mixing dissimilar materials that have different levels and types of movement characteristics, e.g. concrete (shrinkage) v. clay (expansion). Bricks made using limestone aggregates, such as those produced by AG, will generally have lower moisture movement values than bricks made with gravels and type aggregates.
- Shrinkage cracks tend to be mainly cosmetic and do not normally affect the integrity of a structure.

### PREVENTION OF EFFLORESCENCE

Efflorescence or lime bloom occurs as a result of the leaching of free calcium ions which are present in the solution used for the hydration of the cement matrix within the bricks.

As the calcium ions migrate to the surface of the brick they crystallise on the surface and appear as a milky white deposit.

To prevent this, AG has developed systems which involve using advanced additives both within and on the surface of the brick. This has meant that the amount of efflorescence emanating from AG bricks is classed as minimal. However, efflorescence can still occur if good site practice and laying procedures are not followed.

The most common causes are:

- Poor building practice, such as partially built walls being left exposed to rain.
- Poor storage of bricks on site, both once packs have been delivered and after they have been broken down and bricks have been stacked out ready for building.
- Poorly designed or missing copings and flashings.
- Failure to protect incomplete brickwork at the end of the working day. It must be remembered that mortar is rich in cement and whilst in its uncured state it is extremely susceptible to water leaching out the lime within it.

### PLASTERING AND RENDERING

Before rendering or plastering the area of concrete common brickwork should have raked joints to form a key for the specified finish. To ensure optimum adhesion, a plaster bonding coat or similar should be applied.

Also for good adhesion, a spatter dash coat of 1 : 2-3 parts cement : sand, can be applied before the undercoat.

On concrete masonry the render coat should be 1 : 1 : 6 (this is referring to 3 elements not 2 as above) or equivalent, using clean sand.

When applying two or three coat rendering, the final coat should be a weaker mix than the undercoat or the same mix but thinner.

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### PAINTING

Preparation is key for success. Smooth faced bricks can be painted with emulsion or alkali resisting paint, especially plastic emulsions. However, brickwork should be dry and free from dust, lime bloom, grease and other detritus. Oil-based paints should be avoided.

### CLEANING DOWN

While bricks are a low maintenance building material, there are some simple steps that should be taken to ensure their long term attractiveness and longevity.

These involve:

- Ensuring the masonry remains weatherproof.
- Correct design and detailing of protruding elements.
- Prevention of mortar smears and efflorescence through good site practice.

If the above is carried out, then the amount of cleaning down should be minimal.

### REPAIRS

One of the many advantages of AG bricks is their through colour which enables any repairs on chips or damage to be carried out in a reasonably discrete manner.

### WINTER WORKING

Your AG bricks will be sealed with shrink wrapping and once opened packs should be kept protected, as should incomplete or fresh brickwork.

It is important that all bricks removed from packaging even those stacked out on scaffolding, are fully protected.

If left overnight or when it rains during bricklaying, the top of newly laid walls should be protected.

If the temperature falls below 3 degrees C or when frost is imminent bricks should not be laid as brickwork and mortar dry out more slowly in cold temperatures. Mortar will also take more time to cure, so it is important that adequate protection is given to the wall until the mortar has developed enough strength to resist frost attack.

### WASTE DISPOSAL

AG bricks are completely inert and may be crushed and recycled as aggregate or inert fill. All packaging, which may consist of polythene covers, plastic strapping and wooden pallets or skids, is recyclable. If burnt, however, they may release smoke and fumes, which if inhaled in sufficient quantities can be injurious to health.

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The information and guidance contained in our Technical Data Sheets are regularly reviewed as part of AG's continuous development and improvement programme. Updates and amendments can be made without notice and the Company cannot accept liability for any errors or omissions.

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