
PROJECTING BRICKWORK - Using standard bricks in non-standard applications

Architects and Specifiers, are designing more features to facades; projecting brickwork, either a header or stretcher projection, or even both depending on the brickwork bond pattern, is becoming increasingly common.

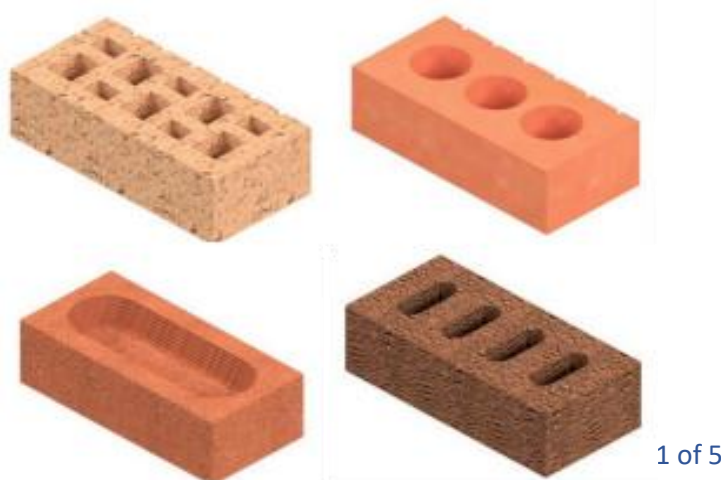
Historically, one brick thick walls installed solid bricks, however modern bricks incorporate frogged indentations or perforations within a cavity wall design, which can create issues when a projecting brick detail is required. The cost effective solution is to use the same standard bricks for the projecting detail, however the most durable solution is to use a specially made solid brick, to match the specification, however the cost implications can be prohibitive.

How do we assess a brick's suitability?

When using standard Ibstock bricks, a product performance risk assessment (PPRA) must be completed. To properly assess the suitability certain information is required.

Brick type

To assess durability the proposed brick must be specified prior to assessment. Nearly all bricks manufactured will present with either perforations or an indentation known as a frog, these patterns will vary depending on brick types (Fig 1). The brick is assessed on a number of its properties such as dimension of 'frog' or perforation proximity, clay constituents and brick durability historically amongst others.



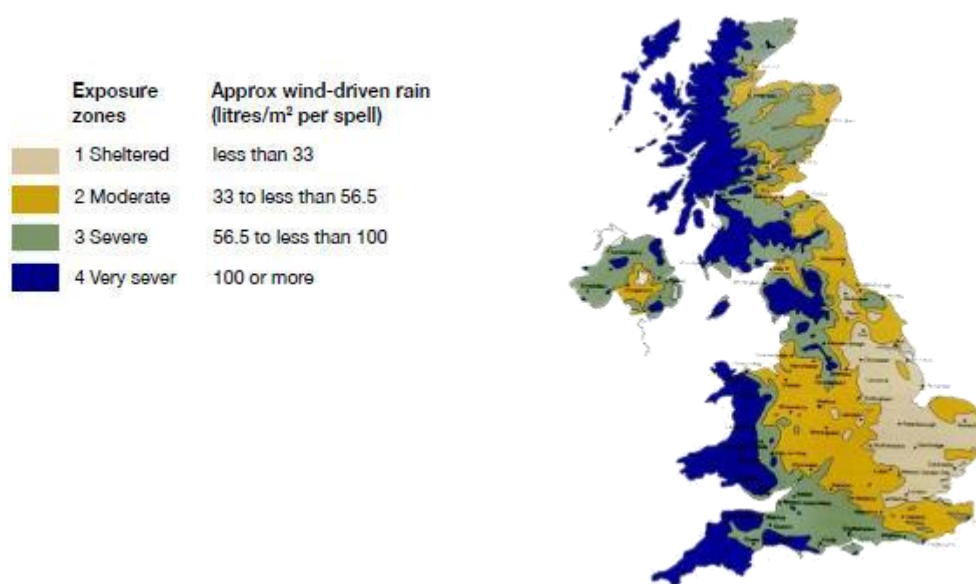
Issue 1

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If the design detailing deviates from standard brickwork construction, all standard bricks must be assessed for durability.

Location

It is critical the site location is disclosed. Why? Using the Exposure to wind driven rain map (Fig 2) this identifies the severity of wind driven rain on the exposed bed of standard facing bricks in a given location.



Durability

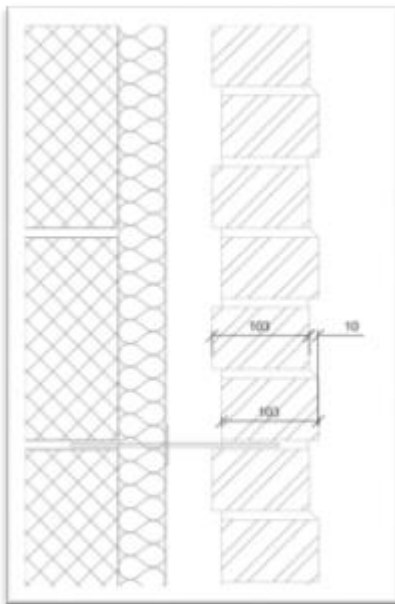
Each brick receives a classification based on its resistance to the natural weathers freeze / thaw actions and soluble salt content. These are both tested in the laboratory and classified as per BS EN771 -1 (Fig.3)

F2 S2 - Severe Exposure / Prolonged Saturation Active Soluble Salt Content
F2 S1 - Severe Exposure / Normal Exposure Active Soluble Salt Content
F1 S2 - Moderate Exposure / Prolonged Saturation Active Soluble Salt Content
F1 S1 - Moderate Exposure / Normal Exposure Active Soluble Salt Content

Projection

The proposed depth of the projection is critical to the assessment for a number of reasons;

Projecting brickwork creates a ledge that will collect water, environmental dirt and organic deposits, all of which can reduce longer term durability.



- Ibstock bricks typically have perforations or ‘frogs’ within of the face of the brick, given tolerance on site there 20mm is a high risk of exposing the frog or perforations
- The top bed of the brick is not a finished face and therefore not as durable when exposed
- Collection of environmental dirt and organic deposits can result in run-off stains resulting in a management issue for the building owner



Durability Guarantee

Maintaining a full 60 year guarantee can be achieved using specially manufactured bricks called a BD1.3 or a filled and faced special. Both of these specials are faced on the top bed (top face) to the same standard and finish as the header or stretcher, therefore maintaining durability to wind driven rain and the freeze / thaw action. The specified brick type will determine the appropriate special required

BD1.3

This is a manufactured solid brick, with no perforations or frogs to match the specified brick type. These are usually fired in a different kiln to the standard bricks so will have very slight colour difference but this is minimal.



Filled and faced products

Textural or smooth finishes can be created from standard perforated or stock facing bricks. Heavily textured solid created from a standard perforated brick using the fill & face method. The texture is created using epoxy (Fig 4).

Standard bricks

If standard bricks are the preferred option these will be assessed with a recommendation of maximum projection and a durability guarantee, typically of half the standard Ibstock durability warranty of 60 years. In some cases, we guarantee less years or may provide none at all, depending on the brick, location and detail involved.

Naturally the more exposed the bed face, in terms of projection and weather impact, the lower the guarantee to be provided.

Hit and Miss Brickwork

Hit and miss brickwork will fully expose the bed face (top face) and for both aesthetic value and durability and fully exposed brick should always use either a BD1.3 or filled and faced special.

Durability

All Ibstock durability warranties are maintained when used in accordance with EN 1996 / Eurocode 6 and PD 6697:2019.

Laboratory testing to prEN772-22: Determination of freeze- thaw resistance of masonry units, result in F2 (frost resistant) bricks as the only bricks to specify in projecting and/or hit and miss detailing.

It is the responsibility of the project Structural Engineer to ensure any projecting or hit and miss brickwork is adequately supported and ensure all design complies with PD 6697: 2019 and EN 1996 / Eurocode 6.

