

Brick Faced Units

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For Architectural purposes one of the most popular and successful finishes is a facing of traditional brickwork.

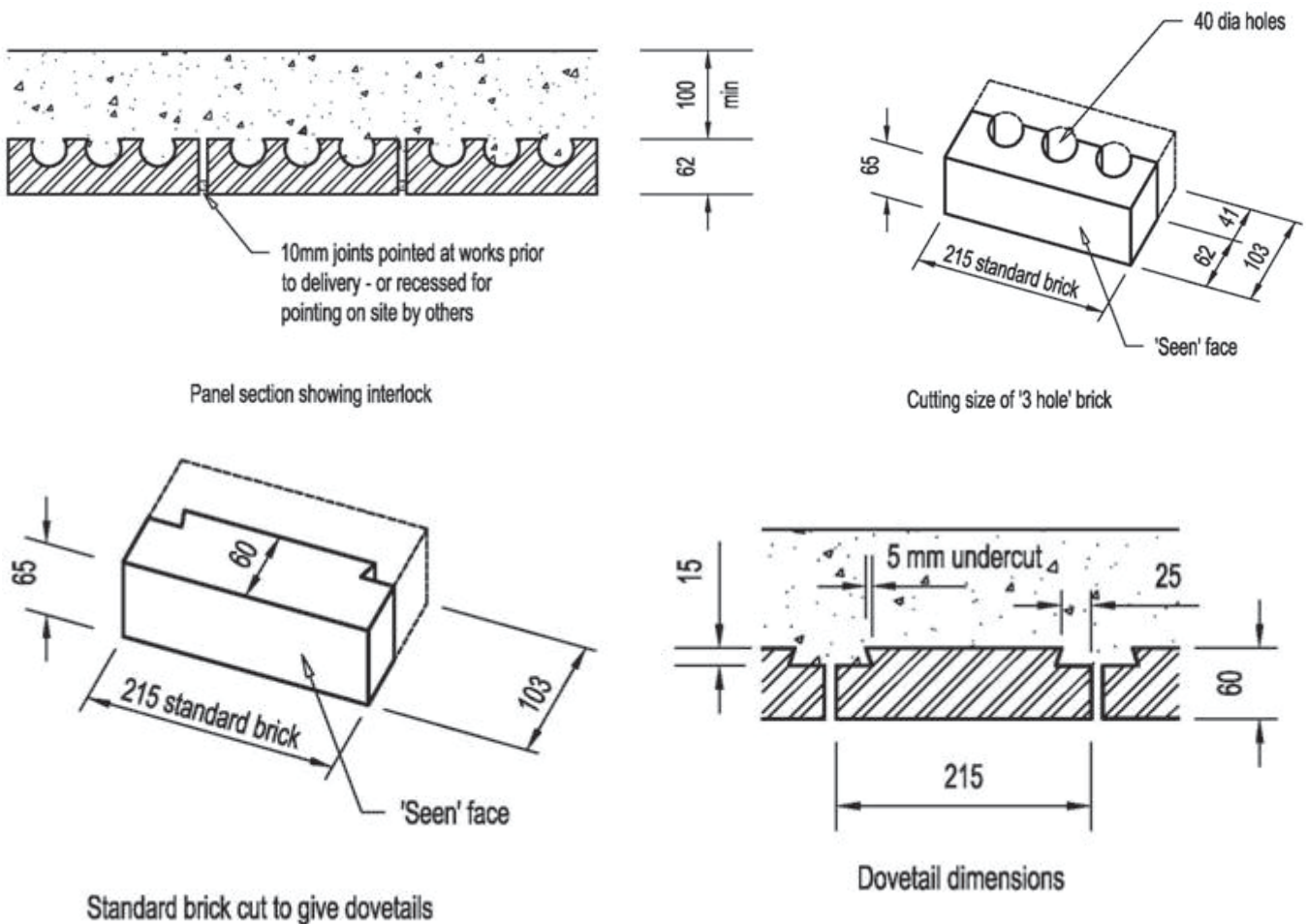
This type of treatment allows the best of both worlds since the concrete panels will give the quality, strength, speed and durability associated with precast concrete, and the facing will give the traditional appearance afforded by the vast range of bricks available.

To get the best out of such a system, it is worth while spending time at the onset making sure that the details are thought out. Although simple in principle, there are a few ground rules that should be followed for the best results.

Brick selection

1 Colour – It is best to choose a brick with good uniformity of colour. Although bricks are taken from pallets and mixed in a random order, uniformity minimises the risk of colour steps between panels.

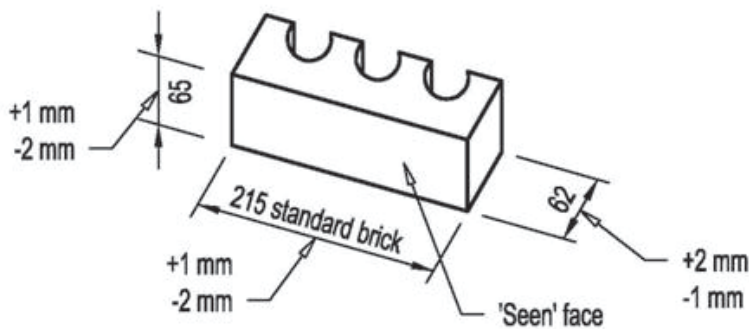
2 Type – It is important that bricks are securely anchored into the panel. The easiest way of doing this is to use a '3 hole' type, cut as shown. The resulting shape provides an excellent anchor. Solid bricks can be similarly cut to give a dovetail anchor, but frogged bricks should be avoided.



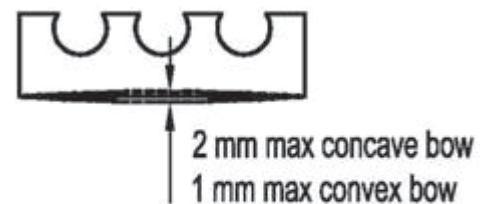
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3 Tolerances – The tolerances set out for normal use are not really tight enough for 'cast-on' bricks. Variations in length measured over 24 bricks are between 5235 and 5085, which equates to $\pm 3\text{mm}$ per brick. Most suppliers will however improve on these figures by arrangement. Ideally the bricks should be made with tolerances as shown.



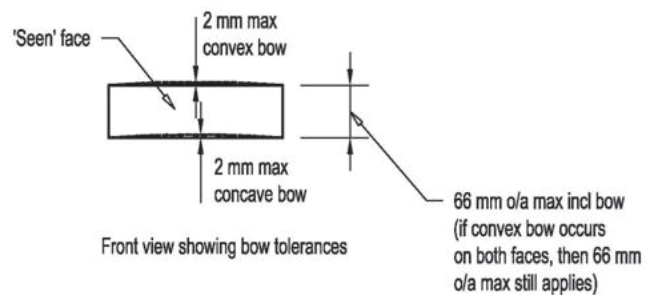
View showing general tolerances



Plan view showing bow tolerances

4 Properties – Ideally a maximum water absorption figure of 12% should be specified. A maximum salts figure of 0.49% is desirable.

5 Specials – A brick manufacturer should be chosen who is able to supply all the bricks including any specials, and also carry out the cutting of the 'standard' bricks to produce the narrow section required.



Front view showing bow tolerances

6 Delivery period – Bricks with an extended delivery period for specials should be avoided since the production of a panel depends on all the bricks for that panel being available.

7 Panel size – Panels should be sized in normal brick modules as with any wall. It is important that no small 'offcuts' are required to make up the length. A certain amount of 'shuffling' of perpend (vertical) joints is allowable to completely 'fill' the panel width, but this should be agreed with the Architect.

8 Panel thickness – When designing the panel to take loads, including self-weight, the thickness of the bricks is not taken into account as being effective. The minimum thickness of concrete normally taken is 100mm, giving an overall panel thickness of 160mm when the brick is taken into consideration. This is however for a smallish panel, and larger units may require more concrete thickness as specified by the Engineer.

9 Brick layout – Any normal brick bond pattern can be provided, although excessive use of headers should be avoided since this means more bricks per panel. For example, Flemish Bond (alternate headers and stretchers) means that 33% more bricks have to be placed in the mould. Edges of panels, particularly at returns and reveals should be examined to ensure that no unfinished faces are visible. Patterns may be formed on panels as can be seen from the photograph.



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10 Joints – As mentioned above, the joint between bricks is usually detailed as a nominal 10mm. They can be pointed at the precast factory, using normal cementitious materials, with the finish to the joint being the same as for any hand finished pointing.

Alternatively, they can be left recessed further, to allow hand pointing on site after erecting. If bricks are porous or fissured, details that allow water to stand in the joint should be avoided.

The joints between the panels are the same as for any precast cladding unit. They must be able to accommodate tolerances in manufacture and erection as well as thermal movements. They will normally be finished with a gunned-in sealant to provide a fully weathertight envelope. They cannot normally be as narrow as 10mm due to practicalities of getting the sealants into the gap.

It is worth remembering that the standard of workmanship used in producing a brick faced panel is very high and reflects factory conditions. Any insitu brickwork that adjoins this will need to be of a similarly high standard

The treatment works equally well on columns and spandrels as on flat panels. Bricks can also be mixed with other finishes such as stone (see photo).

Columns can be made to be structural and erected on site as a single element ready to take load straight away. Spandrels can also be structural, spanning between supports and even carrying central mullions. This ability to span removes the need for falsework, particularly with overhangs and arches, which can be delivered and erected as a complete unit.

