

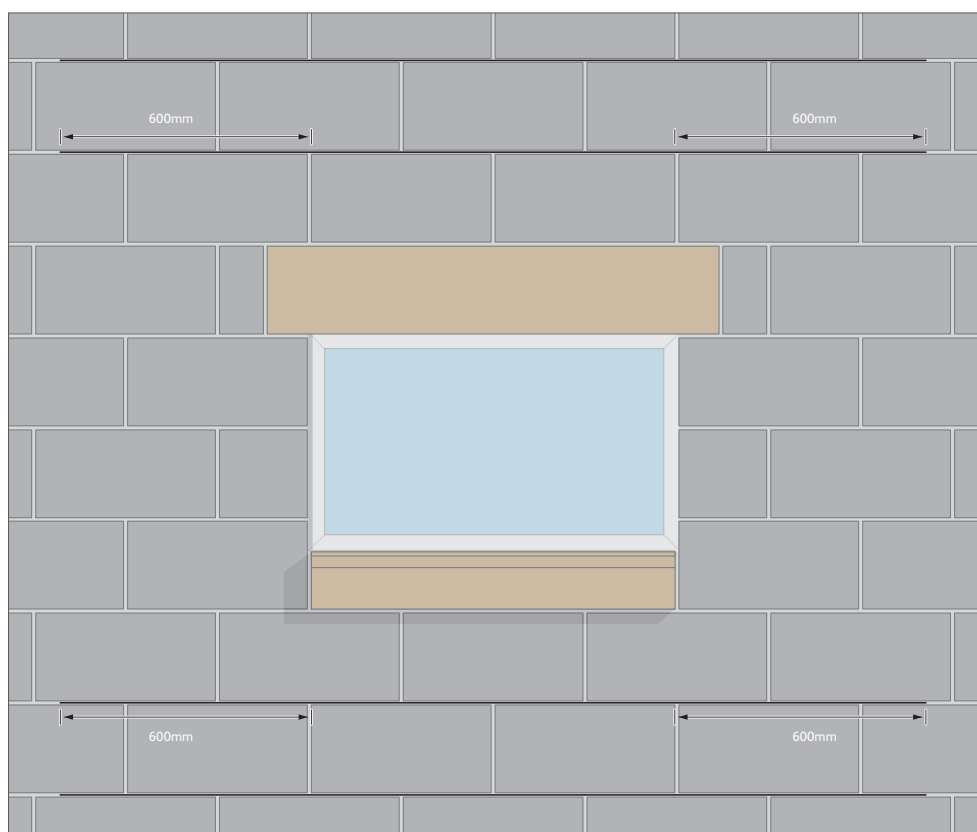


CAST STONE DECORATIVE CILLS & HEADS IN RENDERED BUILDINGS

Wind-driven rain may penetrate rendered masonry through minor cracks and around openings, architectural details, etc. therefore cavity trays with stop ends are required over and under all openings.

The NHBC generally advise that weep holes do not need to be provided where masonry walls are fully rendered (refer to NHBC guidance for exceptions). However the introduction of Cast Stone elements provides the added possibility of moisture ingress via surrounding joints and it is worth considering including them in regions of severe exposure to wind driven rain or if fair faced brickwork will be used higher up the structure.

When installing Cast Stone features in buildings that are to be rendered Forticrete recommend specifying units that are sized to accommodate up to a nominal 25mm render thickness and 15mm on reveals. Speak to a member of the Forticrete Technical Team for specification assistance. For the purpose of this document it is assumed the substrate will be concrete blockwork, although the advice would also accommodate clay facing brickwork. Angle beads, stop beads and render stops should be stainless steel or PVC and affixed with shot fired fixings.



Reinforcement to extend minimum 600mm beyond each end of the opening on the first and second courses above and below.

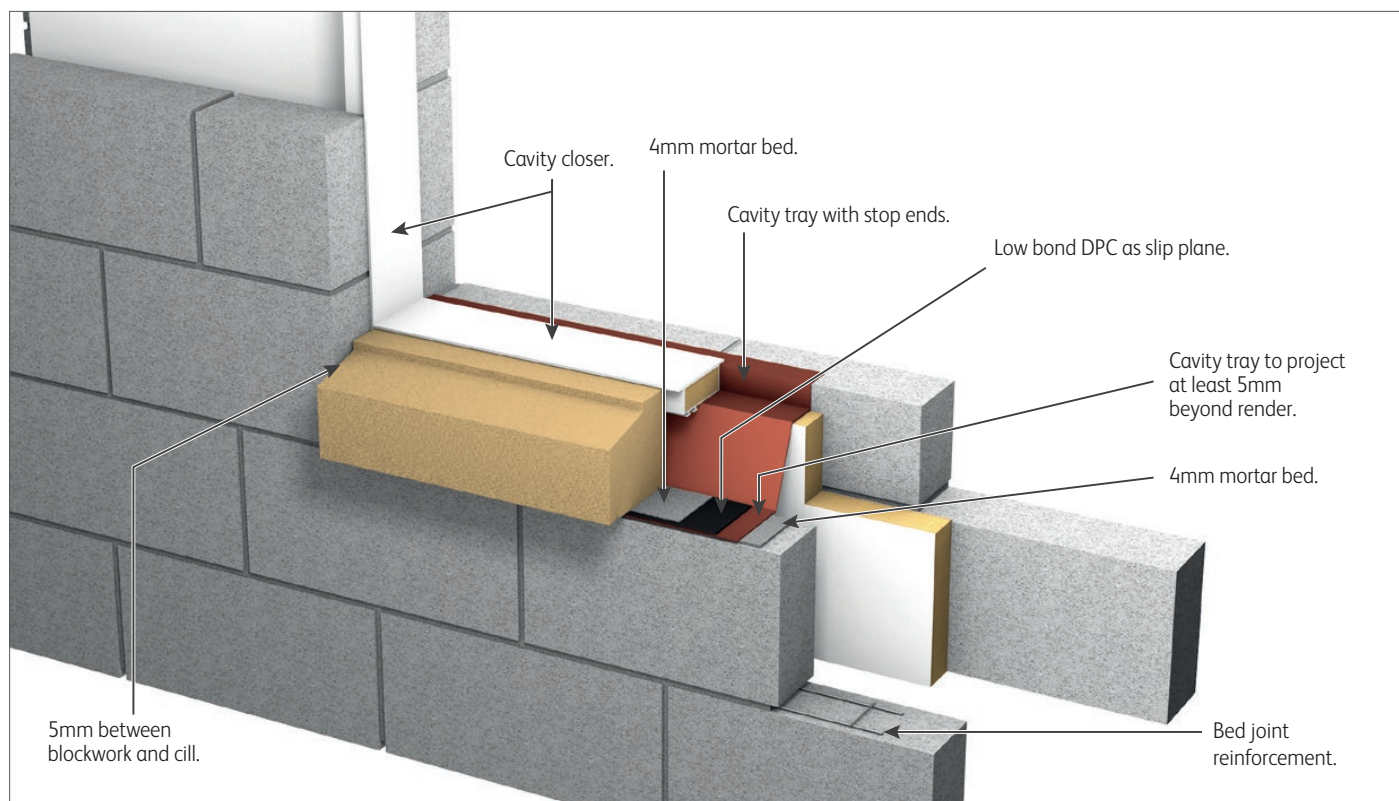
To minimise cracking in render bed joint reinforcement should be incorporated in the building throughout the construction stage in accordance with render manufacturer's instructions. This is usually the ladder type reinforcement to be placed in the two courses above and 2 courses below openings and extending to 600mm either end. Block movement joints should follow into the render.





CAST STONE **SLIP CILLS**

To avoid stresses from differential movement of materials the cill should be installed to following guidance.



For one piece cills up to 1547mm and multiple piece cills;

1. Blockwork setting out should allow a 5mm joint at each end of the cill unit.
2. At the window opening sit the cavity tray with stop ends on a 4mm mortar bed. Ensure the tray projects beyond the face of the blockwork by at least 5mm more than the render thickness.
3. Place a further length of dpc material on top of the outer leaf surface of the cavity tray to act as a slip plane.
4. For severely exposed regions consider including a compressible or tube style weep vent positioned at each end of the cavity tray.
5. On top of the second dpc layer place a further 4mm mortar and carefully place the cill in position.
6. To maintain free movement at the cill ends leave 5mm clear vertically at each end.
7. The front of the cill should project 75mm from the blockwork face below (50mm once rendered).
8. Insert window frames and fix in position sealing perimeters as appropriate.

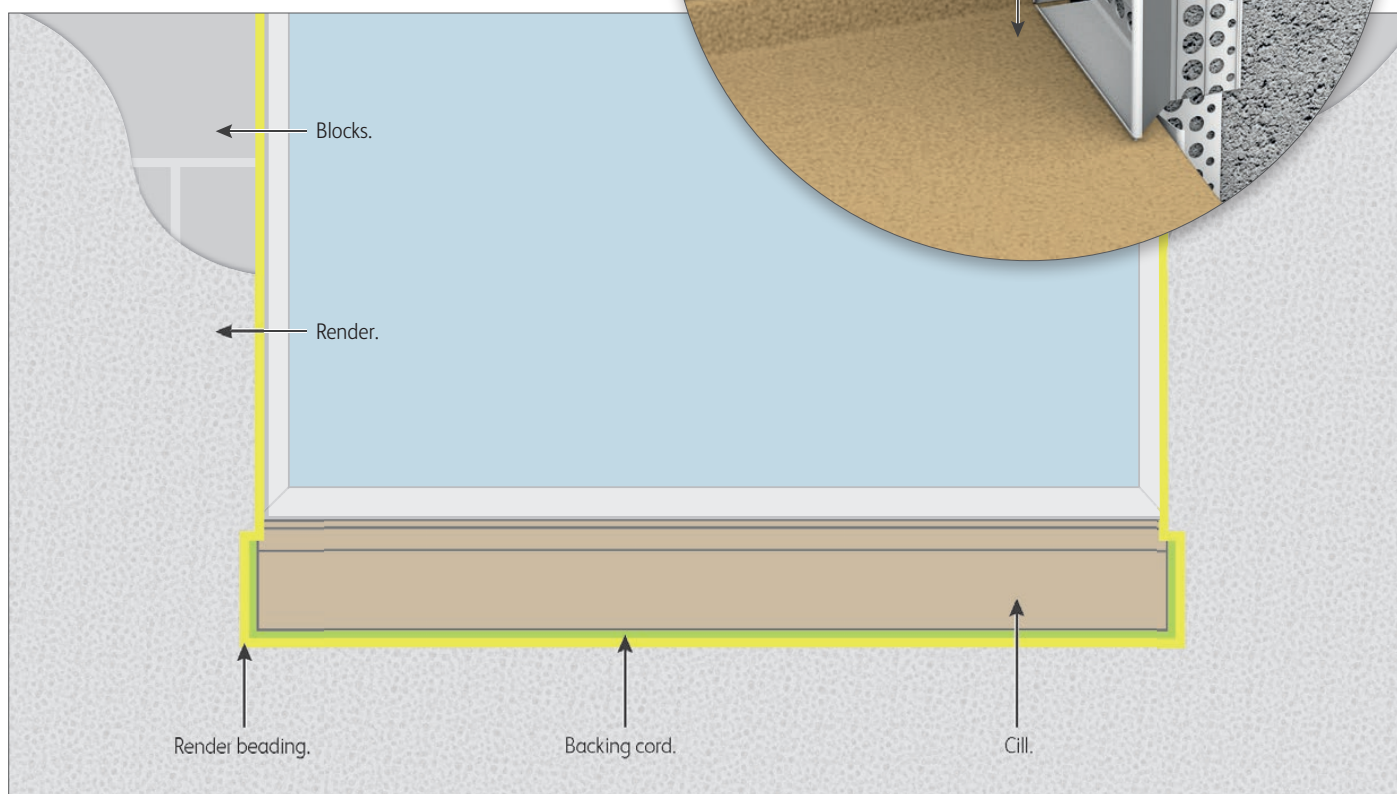




CAST STONE **SLIP CILLS**

RENDERING

9. Fix render beading along the blockwork under the cill allowing the DPC to project over it.
10. Fix render beads to blockwork vertically at each end of the cill maintaining the 5mm free space.
11. Mask around cill edges and cover cills to protect from render splashes before commencing the operation.
12. Render around cill into render beading. When rendering the window reveal ensure that a 5mm gap is maintained around the cill profile. This can be achieved by using a render bead or temporary spacer.
13. Once rendering is complete apply sealant (the same colour as surrounding render) between the cill and render. Use backing cord where appropriate to support sealant.



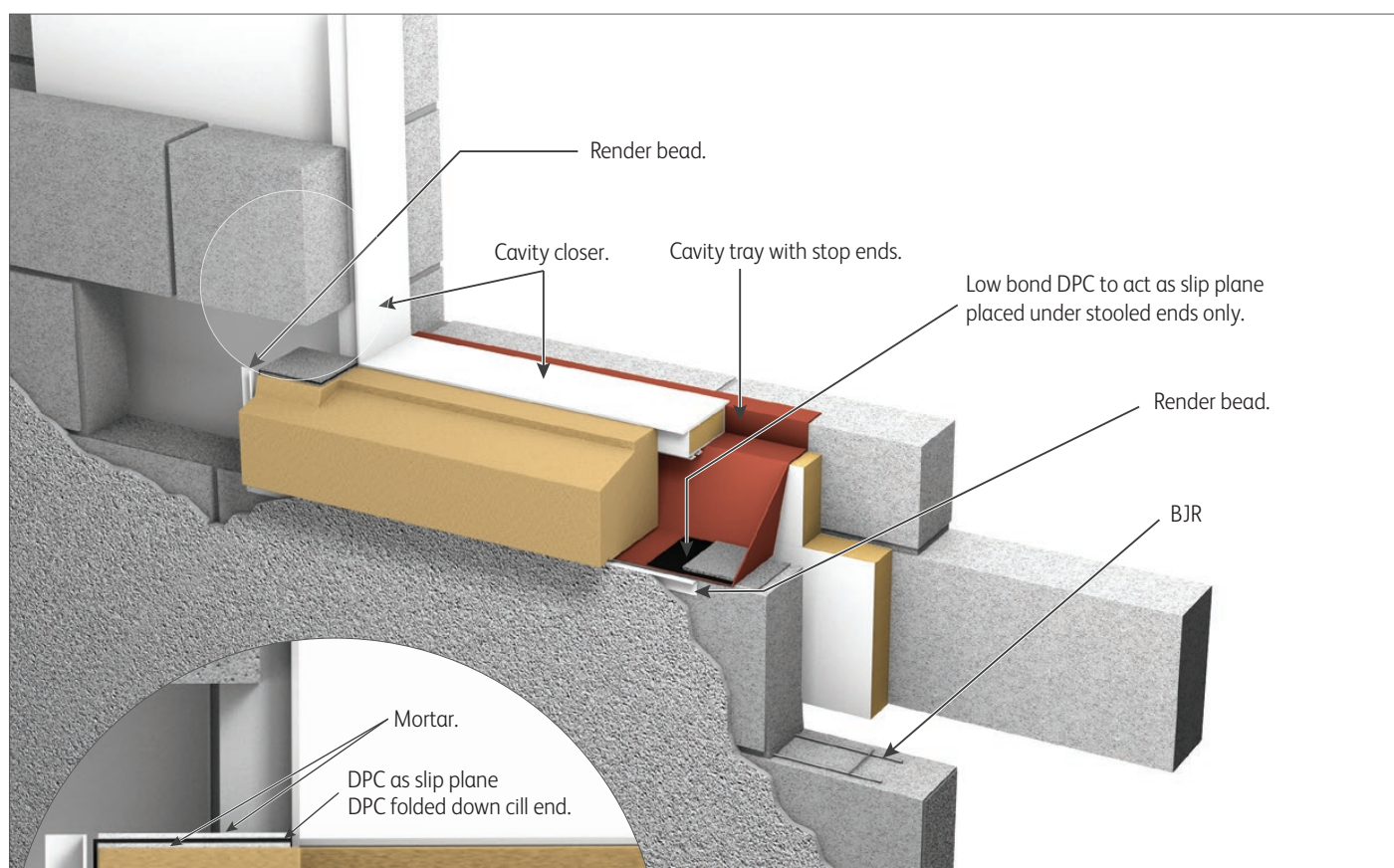
Apply suitable sealant over backing cord to match render and between cill render at the top.





CAST STONE **STOOLED CILLS**

Consider using Forticrete's retro fitted stooled cill to minimise staining from rendering application.
See Installation Guide 3.



2. At the window opening sit the cavity tray (20mm wider than cill with stop ends,) on a 4mm mortar bed. (The window aperture will be narrower than the stooled cill unit). Ensure the tray projects beyond the blockwork by at least 5mm more than the render thickness.
3. For severely exposed regions consider including a compressible or tube style weep vent positioned at each end of the cavity tray.
4. Place a shorter section of low bond dpc material on top of the outer leaf surface of the cavity tray to act as a slip plane. Place at each end under the stooled profile positions only.

For standard stooled cills use the following guidance.

1. Blockwork setting out should allow a 10mm joint at each end of the cill unit.





CAST STONE **STOOLED CILLS**

- 5.** On top of the second dpc layer place a further 4mm mortar under the stool end only and carefully place the cill in position. (The front of the cill should project 75mm from the blockwork below, 50mm once rendered).
- 6.** When forming the masonry reveal above the cill ensure free movement is maintained by covering the stool bed and side of the cill with a cut piece of low bond dpc. To form a slip plane here place a 4mm mortar bed on top of the stool and smooth off. After hardening place a rectangle of low bond dpc cut to cover the mortared stool bed and side of cill. Mortar on top of the dpc bed surface only and continue with construction of masonry reveals.
- 7.** Insert window frames and fix in position sealing perimeters as appropriate.

RENDERING

- 8.** Fix render beading along the blockwork under the cill allowing the DPC to project over it.
- 9.** Fix render beads to blockwork vertically at each end of the cill maintaining the 10mm free space, and over the stooling and into the reveals as appropriate.
- 10.** Mask around cill edges and cover cills to protect from render splashes before commencing the operation.
- 11.** Render around cill stool ensuring there is no adhesion to cill.
- 12.** Render around cill into the render beading.
- 13.** Once rendering is complete, insert backing cord where appropriate and apply sealant the same

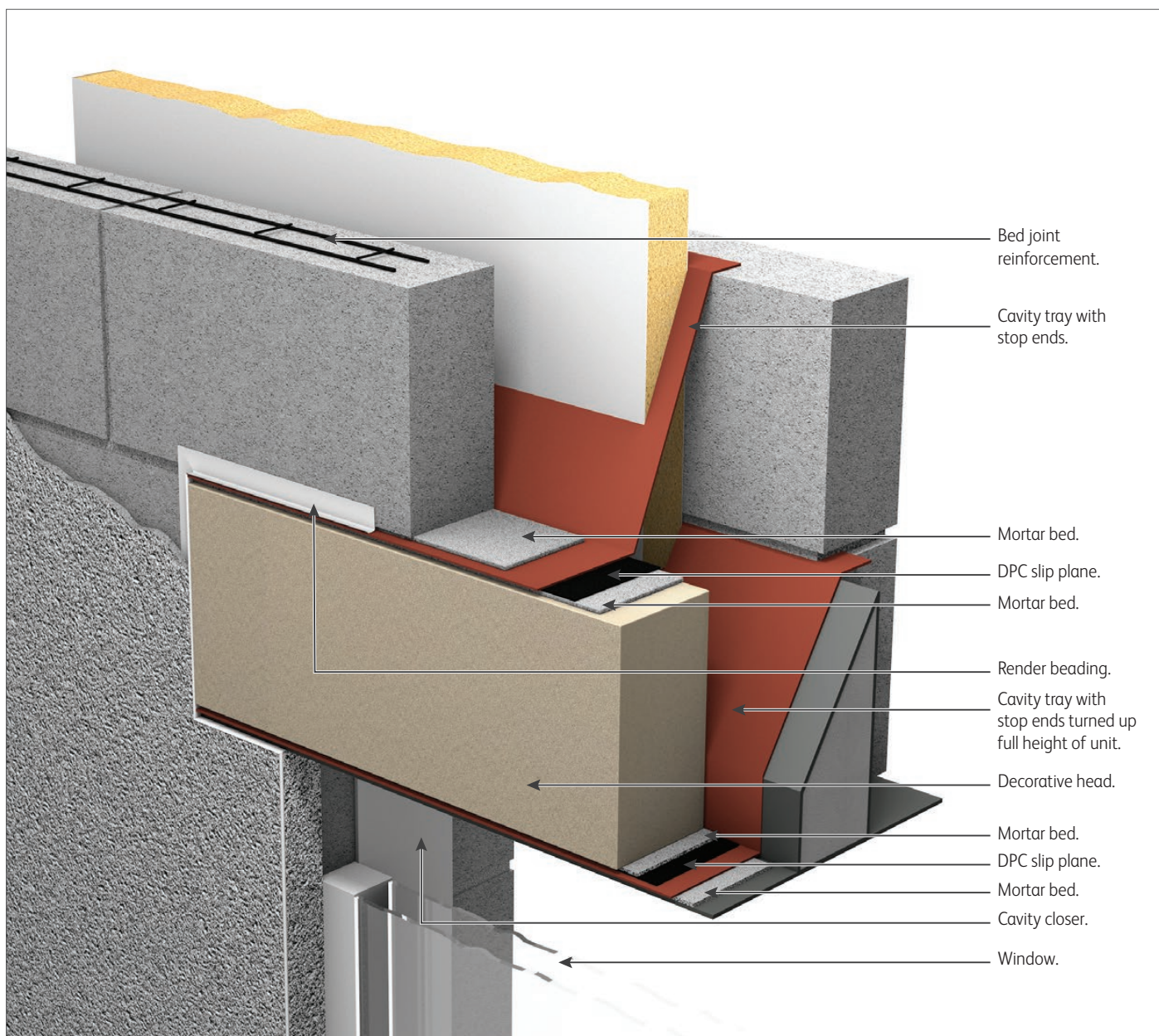




DECORATIVE HEAD WITH STEEL SUPPORTING LINTEL

Decorative heads are not load-bearing therefore suitable support will be required. The supporting lintel will be visible on the soffit but should have a perforated steel surface for render or the addition of soffit cladding.

Decorative heads over 1547mm will generally be supplied in sections. It is important to maintain the free movement of the decorative head by separating it from the supporting steel and surrounding blockwork.





DECORATIVE HEAD WITH STEEL SUPPORTING LINTEL

LAYING THE LINTEL

Follow manufacturers installation advice.

1. Lintels should be installed with a minimum end bearing of 150mm, bedded on mortar and levelled along its length and across its width.
2. Raise the inner and outer leaves simultaneously to avoid excessive eccentricity of loading, with a maximum height difference of 225mm (masonry should be laid on a mortar bed and all perpendicular joints should be filled).
3. The external lintel flange must project beyond the window/door frame and it is recommended that a flexible sealing compound is used between the underside of the lintel flange and the frame.

DPC's

4. In accordance with BS EN 1996-2 and NHBC requirements all external wall lintels MUST be installed with a flexible damp proof course (with the exception of those adequately protected by an eaves overhang or similar form of protection). Stop ends should be provided to avoid moisture entering the cavity near the reveals.
5. Either allow formation of an integral stop end at the end of the decorative head or incorporate proprietary stop ends. For severely exposed regions consider including a compressible or tube style weep vent positioned at each end and at additional recommended spacing when required. Place a DPC slip plane along the full length.

LAYING THE DECORATIVE HEAD AND SECONDARY DPC

6. Blockwork setting out should allow a 10mm joint at each end of the decorative head.
7. Mortar the decorative head onto the slip plane on a full bed of mortar but leave the ends clear. The Head should project by 25mm from surrounding blockwork.
8. Lay a DPC slip plane then second cavity tray with stop ends extending to a suitable mortar perp-end for the blockwork course above.
9. The dpc should extend a minimum 150mm up toward the inner leaf.
10. For severely exposed regions consider weep holes positioned at each end and at additional recommended spacing when required.
11. Lay surrounding blockwork on a full bed of mortar on top of the cavity tray as normal ensuring it is in line and plumb.

RENDERING

12. Fix render beading along the blockwork over the decorative head and under bearing supports and into reveals if appropriate.
13. Fix render beads to blockwork vertically at each end of the head maintaining the 10mm free space.
14. Mask around the head to protect from render splashes before commencing the operation.
15. Render around head into the render beading.
16. Once rendering is complete, push compressible backing cord or suitable compressible filler material into the space above, under bearings and at the sides of the decorative head and seal with suitable polysulphide sealant.

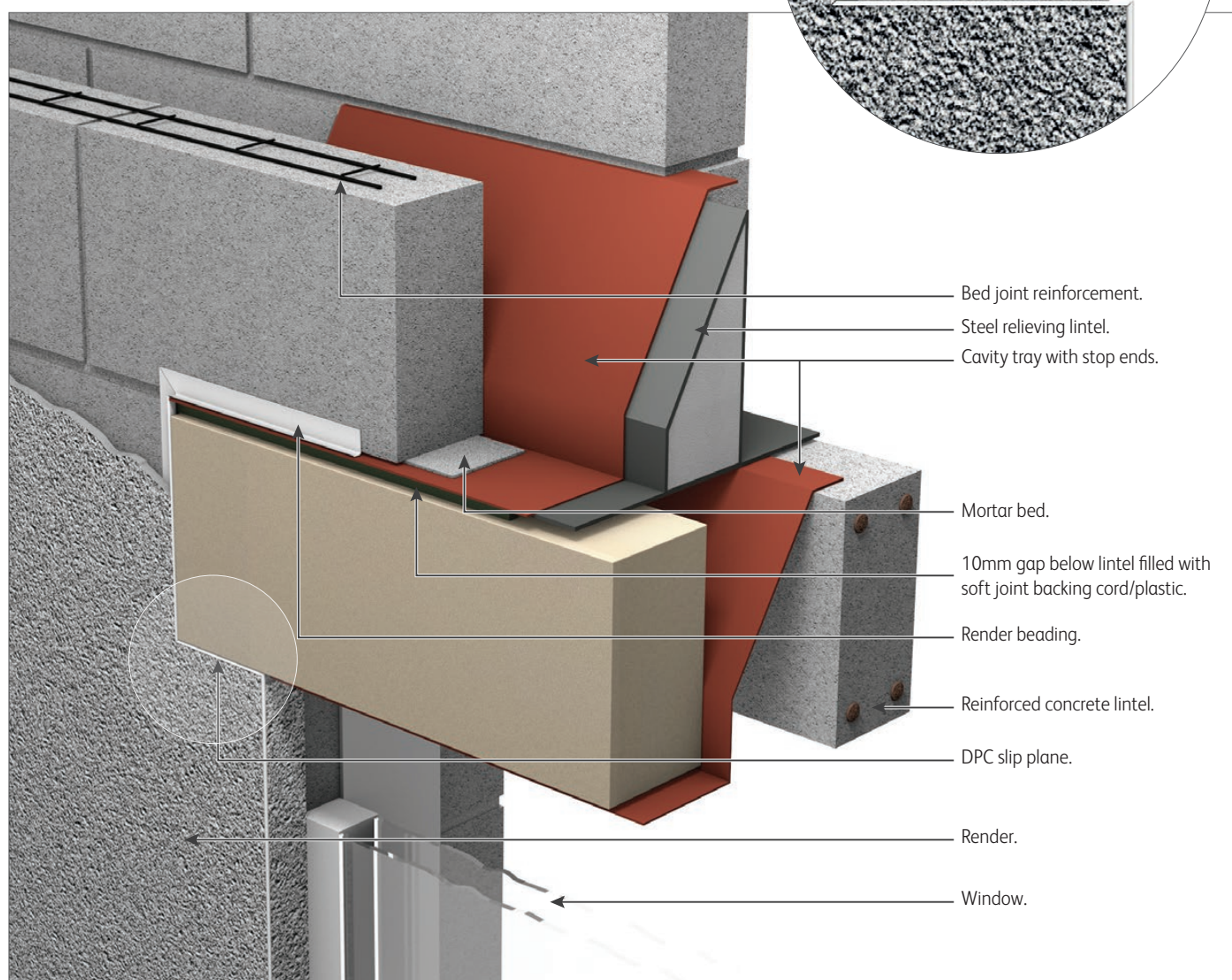




DECORATIVE HEAD WITH STEEL RELIEVING LINTEL

Decorative heads are not load bearing therefore suitable support will be required for the masonry above.

A 10mm soft joint will be required between the lintel and decorative head. Therefore, it is important to specify a lintel that does not have the angled flange designed to shed water over a window as this would impede the movement of masonry around the decorative head. Lintels are available with a flat edge. The opening of the internal leaf will also require bridging by a reinforced concrete lintel or similar.





DECORATIVE HEAD WITH STEEL RELIEVING LINTEL

LAYING THE DECORATIVE HEAD AND DPC'S

1. Blockwork setting out should allow a 10mm free joint at each end of the decorative head.
2. Bed a cavity tray with stop ends on to the supporting blockwork at each side of the opening with a 4-5mm mortar bed. Stop ends to run full height of unit.
3. For severely exposed regions consider including a compressible or tube style weep vent positioned at each end of the cavity tray. (The cavity tray will eventually need to be cut back to suit the window frame). Place dpc slip plane under bearing of head.
4. Bed the decorative head on to a further 4mm bed of mortar. The decorative head should project by 25mm from surrounding blockwork.
5. Leave the ends of the decorative head clear of mortar and construct the block courses adjacent to the head.

RENDERING

11. Fix render beading along blockwork above the decorative head and upper cavity tray and under the head and lower cavity tray at bearings and into reveal where appropriate.
12. Fix render beads to blockwork vertically at each end of the head maintaining the 10mm free space.

LAYING THE LINTEL AND SECONDARY DPC

6. Follow the lintel manufacturers installation advice. Lintels should be installed with a minimum end bearing of 150mm onto masonry past the end of the head, bedded on mortar and levelled along its length and across its width.

DO NOT BED THE LINTEL ONTO THE DECORATIVE HEAD.

A free space should be maintained between the lintel and Decorative head.

7. In accordance with BS EN 1996-2 and NHBC requirements all external wall lintels MUST be installed with a flexible damp proof course. Stop ends should be provided to avoid moisture entering the cavity near the reveals.
8. Either allow formation of an integral stop end at the end of the decorative head or incorporate proprietary stop ends. For severely exposed regions consider including a compressible or tube style weep vent positioned at each end of the cavity tray and at additional recommended spacing when required.
9. Continue with blockwork above the lintel on top of the cavity tray as normal on a full bed of mortar ensuring it is in line and plumb.

13. Mask around the head to protect from render splashes before commencing the operation.
14. Render around head into the render beading.
15. Once rendering is complete, push compressible backing cord or suitable compressible filler material into the space above, to the side and below at bearings of the decorative head and seal with a suitable polysulphide sealant.





MORTAR

Generally, when laying cast stone products mortar strength should not exceed designation (iii), 1:1:5 / 6 cement: lime: sand proportional mix. The addition of lime is desirable to accommodate movement.

Mortar no stronger than strength class M4 can be specified however movement may be restricted if lime is not a constituent element.

Cracking can occur if mortar of a higher strength than recommended is used or if movement of the cill head is restricted by mortar pointing.

Refer to Technical Information Sheet 5 for recommended associated materials, Technical Information Sheet 3 for mortar specification, and the Forticrete Site Work Guide for further information.

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