

Chapter 6.11



Render

This chapter gives guidance on meeting the Technical Requirements for factory-made and traditional render applied to external walls and render onto board backgrounds.

Render intended for below ground waterproofing is outside the scope of this chapter (see Chapter 5.4 Waterproofing of basements and other below ground structures). Chapter 6.9 Curtain walling and cladding contains guidance for insulated render systems.

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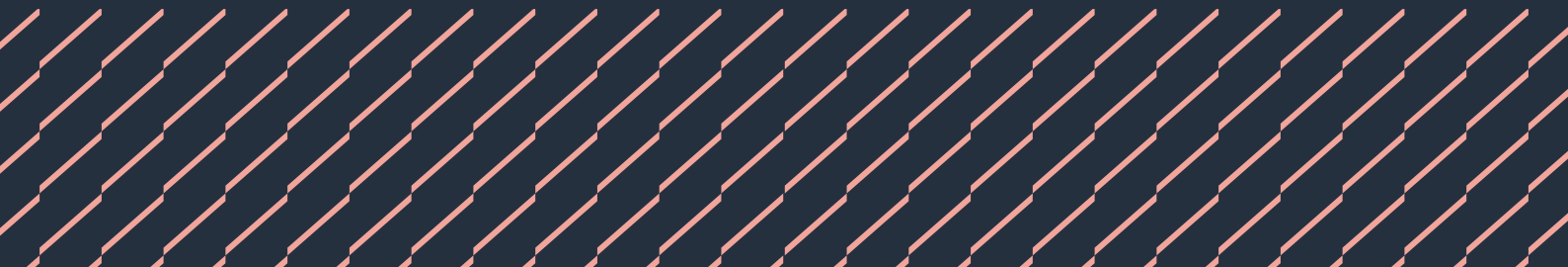


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Introduction

This chapter is arranged in sections covering:

- site- and factory-made render
- render onto board backgrounds
- detailing.

Definitions for this chapter

Background	The surface to which the render is applied.
Base coat	The first render coat.
Cured	The finished render state when all chemical reactions have taken place.
Decorative finishes	An aesthetic finish not generally contributing to weathertightness.
Dry dash	Aggregate applied to finish the render.
Factory-made	Render mortar arriving on site premixed, generally including admixtures and colouring, and either ready to use or requiring only the addition of water.
Final coat	The last render coat.
Movement joint	A joint designed to accommodate predicted movement in the background or render.
Preparation coat	An application to provide an appropriate key or bond, including a spatterdash or stipple coat.
Proprietary render systems	Renders and their specified backgrounds with proven compatibility, which fall outside the guidance given for site- and factory-made renders.
Ribbed metal lathing	Metal lathing that can be used as a carrier for render.
Site-made	Renders made on site to recognised designated or prescribed mix proportions.
Structure	Structural elements of the building providing support to the render or proprietary render system.
Substrate	The wall composition which offers support to the background intended to be rendered (the substrate and background may sometimes be the same).
Undercoat	The coats preceding the final coat.
Wet dash	A traditional render consisting of aggregate bound in slurry applied to the undercoat prior to setting.

6.11.1 Compliance

Also see: BS EN 13914-1 and BS 8000-0

Render, including site-made, factory-made and render onto board backgrounds, shall comply with the Technical Requirements.

Render that complies with the guidance in this chapter will generally be acceptable.

6.11.2 Provision of information

Designs and specifications shall be produced in a clearly understandable format, include all relevant information and be distributed to all appropriate personnel.

Design and specification information should be issued to site supervisors, relevant specialist subcontractors and/or suppliers and, where relevant, include the following information:

- a full set of drawings indicating areas to be rendered, and construction details, eg the position of movement joints and how interfaces are formed
- the render manufacturer's technical information, including parts of the system design manual or installation guidance relevant to the specific site and construction type
- mix proportions for site-made render
- details of the substrate and background
- details of any technical assessments (ie, third-party certifications)
- details of interfaces and abutments, such as joints, junctions and service penetrations
- ancillaries that form part of a rendering system.

Table 1: Process chart for the application of site- and factory-made render to masonry backgrounds

Process	Steps	See Clause
Structure design	Identify a suitable background material compatible with the intended render finish and consider any preparation requirements	6.11.4
	↓	
	Consider how movement will be controlled ie, are movement joints or bed joint reinforcement needed?	6.11.5
Render design	↓	
	Select an appropriate render strength that is compatible with the background	6.11.6
	↓	
	Determine the exposure zone which will influence the render's thickness	6.11.6
Construction	↓	
	Protect the background from adverse weather conditions at the earliest opportunity during and following construction	6.11.3
	↓	
	Assess the likely weather conditions prior to and after rendering	6.11.3
	↓	
	Assess the background, eg suction and surface preparation, and apply a preparation coat where necessary	6.11.4
	↓	
	Protect the completed render as it cures	6.11.3

6.11.3 Weather conditions

Rendering shall only be carried out in suitable weather conditions unless appropriate precautions are taken.

Consideration should be given to likely weather conditions and, where required, measures taken to allow render to cure satisfactorily.

When applying render in wet conditions:

- the background should not be saturated
- downpipes or temporary downpipes should be used to prevent the background or completed render from becoming saturated
- curing render should be protected from heavy rainfall
- specialist preparation coats should be used in accordance with the manufacturer's recommendations.

When applying render in hot conditions, the following precautions should be considered:

- avoid curing render from being directly exposed to strong sunlight
- lightly spray the render with clean water to prevent rapid drying.

When applying render in cold conditions:

- the air temperature should be at least 2°C and rising
- the background should be free from visual signs of frost
- the background should not be saturated.

Where the air temperature is at, below or likely to fall below 5°C, appropriate precautions such as covering with a hessian sheet should be used to protect curing render.

Factory-made render should be installed in accordance with the manufacturer's recommendations for weather conditions.

Acrylic renders have different curing requirements which should be considered.

6.11.4 Backgrounds

Backgrounds shall be appropriate for their intended purpose and suitably prepared to receive render. Issues to be taken into account include:

- 1) preparation of masonry backgrounds
- 2) preparation of clay brick backgrounds
- 3) ribbed metal lath.

6.11.4.1 Preparation of masonry backgrounds

Masonry backgrounds should be constructed in accordance with Chapter 6.1 External masonry walls and include DPCs and cavity trays. The thickness of single-leaf masonry walls should be in accordance with PD 6697.

The surface to be rendered should be free from dust, loose particles, efflorescence and organic growth, and, where applicable, be prepared in accordance with the render manufacturer's recommendations.

Masonry backgrounds with a smooth surface or close texture should be treated to provide an adequate key by either applying:

- lath, or
- a spatterdash or stipple coat.

The suction of the block should be appropriate for rendering. High or low suction will generally require a preparatory coat. The likely suction of the block can be gauged by applying a small quantity of water to the surface and observing the effects:

- water being absorbed instantly is an indication of high suction
- water running from the surface with little absorption suggests the background has low suction.

A spatterdash coat typically comprises cement and sand at a ratio of 1:3 mixed with water and often a bonding agent, such as styrene-butadiene rubber (SBR) or ethylene vinyl acetate (EVA). The mix should be applied by dashing onto the background to give a rough texture approximately 3-7mm thick.

Generally, raking out mortar joints to blockwork will not sufficiently improve the key, and may extend the curing time of the base coat.

6.11.4.2 Preparation of clay brick backgrounds

The brick manufacturer's recommendations for rendering should be followed.

Where S1 bricks are used, the render mix should resist sulfate.

To provide an appropriate bond, clay brick backgrounds with a water absorption rate of between 9% and 15% should generally have sufficient suction to provide a mechanical key. Alternatively, when rendering onto bricks, one or more of the following methods of improving the key can be adopted:

- keyed bricks used
- mortar joints raked out to a depth of 10-12mm (although this may increase curing time).
- a spatterdash coat applied

Render on an external leaf of clay bricks (F2,S1 or F1,S1 designation bricks to BS EN 771) in severe or very severe exposures is not permitted where the cavity is to be fully filled with insulation.

6.11.4.3 Ribbed metal lath

Ribbed metal lath should be:

- fixed in accordance with the manufacturer's recommendations
- supported at 350mm and up to 600mm centres for stiffer metal profiles
- fixed with the correct side to be rendered facing out
- fixed with a 25mm drained and vented cavity when applied to framed structures
- austenitic stainless steel to BS EN 10088-1.

Render onto ribbed metal lath can be vulnerable to damage where impact is likely to occur, such as beside communal paths. Appropriate reinforcement may be used to help improve the render's impact resistance.

6.11.5 Accommodation of movement

Also see: PD 6697

Rendered walls shall be detailed to reduce the risk of damage due to movement in the background. Issues to be considered include:

- 1) movement in masonry background
- 2) dissimilar materials
- 3) movement in ribbed metal lath render.

The construction should include appropriate measures to reduce the risk of damage to the render caused by movement in the background, such as shrinkage, thermal or differential movement. The designer should follow the guidance in this chapter, together with the render/background manufacturer's recommendations. Alternatively, provision for movement should be designed by an engineer in accordance with Technical Requirement R5.

Areas of the building to be rendered should be identified prior to construction, and movement control considered as part of the design.

6.11.5.1 Movement in masonry background

Render and masonry backgrounds should be detailed to reduce the likelihood of cracking and crazing in the render. Issues to be considered include:

- the potential for movement in the background and render
- size, quantity and positioning of openings
- compatibility with the background
- density of the masonry
- the size and geometry of rendered panels
- the orientation of the building
- thermal shock
- moisture content of the materials
- exposure conditions.

Where length/height ratios are greater than 3:1, consideration should be given to providing suitably designed:

- movement joints, or
- bed joint reinforcement.

Where movement joints are provided, they should:

- be continued through the background and render (including any horizontal beads)
- be made weathertight with an appropriate sealant
- not align with openings such as windows, doors or meter boxes.

Austenitic stainless steel bed joint reinforcement conforming to BS EN 845-3 should be provided in the first two courses of the external masonry leaf above and below any opening to help distribute tensile stress and avoid localised cracking. Where possible, the reinforcement should project 600mm beyond the opening.

Figure 1: Typical movement joint

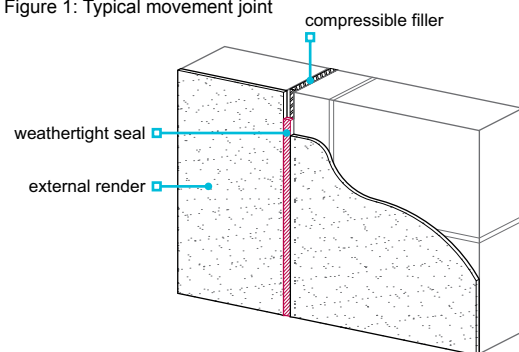


Table 2: Concrete block categorisation

Category	Compressive strength of the blockwork	Dry density
Low density aircrete	2.9-3.6N/mm ²	<500kg/m ³
Normal density aircrete	3.6-9.0N/mm ²	500kg/m ³ +
Ultra lightweight aggregate	3.6-7.3N/mm ²	<950kg/m ³
Lightweight aggregate	3.6-7.3N/mm ²	950-1,500kg/m ³
Dense aggregate	7.3N/mm ² +	1,500kg/m ³ +

Table 3: Preparation of blockwork backgrounds⁽¹⁾

Category	Normal movement joint spacing	Maximum distance of joint from restrained end ie, corners	Suction control
Low density aircrete	Specialist advice required ⁽²⁾		
Normal density aircrete	6m	3m (half normal spacing)	Yes
Ultra lightweight aggregate	6m	3m (half normal spacing)	Not generally required
Lightweight aggregate	6m	Half normal spacing	Not generally required
Dense aggregate	7.5—9m ⁽³⁾	Half normal spacing	Not generally required

Notes

1. The guidance in this table is generally acceptable for render coats in accordance with Table 5 and factory-made one-coat render based on 1:1:6 mix = 3.5N/mm².
2. Specialist advice from the block and render manufacturer should be sought.
3. Specialist advice should be sought where clay brick backgrounds are used.

6.11.5.2 Dissimilar materials

Backgrounds should not be constructed from materials of different densities. Where possible, render should not be continuous across dissimilar materials. Where this cannot be avoided, the render should:

- be stopped at appropriately formed movement joints, or
- have austenitic stainless steel lath reinforcement carried across the joint with a separation strip, such as building paper, behind.

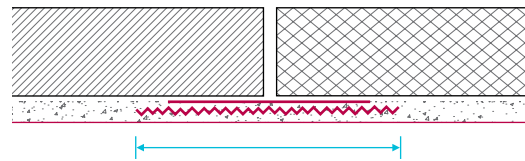
Where significant differential movement is likely to occur, such as the junction between masonry and board backgrounds, render should be stopped either side of an appropriately formed joint.

6.11.5.3 Movement in ribbed metal lath render

To avoid cracking, ribbed metal lath backgrounds should be divided with movement joints into bays no more than 5m wide and:

- site-made render should be applied in three coats
- factory-made render should be applied in accordance with the manufacturer's recommendations.

Figure 2: Metal lath reinforcement and separation strip (min. 300mm)



6.11.6 Mixes

Also see: Chapter 6.1

The render mix shall be appropriate for the intended purpose, be compatible with the background and be designed to minimise the risk of de-bonding, cracking and crazing. Issues to be considered include:

- | | |
|---------------------------------------|------------------------------------|
| 1) sand | 5) application of site-made render |
| 2) mix design | 6) factory-made renders |
| 3) admixtures and bonding agents | 7) lime. |
| 4) coat thickness of site-made render | |

Render coats should not be stronger than the background or any previous coat to which they are applied. Weaker coats can be achieved by reducing the cement content of each coat or by using the same mix but decreasing the coat thickness.

Potable water should be used for mixing render.

6.11.6.1 Sand

Sand for render should be well-graded category 2, in accordance with BS EN 13139. Sand with excessive fine material, clay or silt can shrink and crack so should be avoided.

A sharp gritty or coarse sand is required for strength in the backing coats, but finer sand should be used for the finishing coat.

Typical sand grades should be:

- 5mm down to 0.075mm — undercoat(s)
- 1.18mm down to 0.075mm — final coat.

6.11.6.2 Mix design

Designation ii, iii and iv (strength class M6, M4 and M2) mixes are generally used for rendering.

Stronger mixes are generally more moisture resistant; however, they are also more prone to shrinkage, which increases the likelihood of the render cracking. Weaker mixes may be appropriate for weaker backgrounds in less exposed zones.

For exposure zone classification, see Clause 6.1.6.

Table 4: Designation mix proportions for cement-based mixes

	Mix designation	Mortar compressive strength class equivalent	Mix proportions by volume based on damp sand				
			Cement:lime:sand	Cement:ready-mixed lime/sand ⁽¹⁾	Cement:sand ⁽¹⁾ (using plasticiser)	Masonry cement:sand ⁽¹⁾	
			Ready-mixed lime:sand	Cement:ready-mixed material			
Weaker – stronger	i	M12	1:¼:3	1:12	1:3	-	-
	ii	M6	1:½:4 - 4½	1:9	1:4 - 4½	1:3 - 4	1:2½ - 3½
	iii	M4	1:1:5 - 6	1:6	1:5 - 6	1:5 - 6	1:4 - 5
	iv	M2	1:2:8 - 9	1:4½	1:8 - 9	1:7 - 8	1:5½ - 6½
	v	-	1:3:10 - 12	1:4	1:10 - 12	-	-

Notes

1. With fine or poorly graded sands, the lower volume of sand should be used.
2. Where soluble salts could be present in the background, mixes should have sulfate-resisting properties.
3. Where pigments are specified, batching should be undertaken with care to ensure colour consistency pigments to BS EN 12878 can be used but should not exceed 10% of the cement weight, or 3% where carbon black is used (white Portland cement may be used).

Render mixes should be:

- in accordance with BS EN 13914 Design, preparation and application of external rendering and internal plastering
- appropriate to the strength of the background
- checked against the specification
- of adequate strength and thickness to achieve durability.

Where enhanced water-resisting properties are required:

- Portland cement with a waterproofing agent already incorporated may be used in the undercoat, or
- a waterproofing agent should be added to the render mix in accordance with the manufacturer's recommendations.

Rendering mortar should not be left turning over in the mixer for longer than necessary.

6.11.6.3 Admixtures and bonding agents

Admixtures and bonding agents should:

- be assessed in accordance with Technical Requirement R3
- be used in accordance with the manufacturer's recommendations
- be compatible with the render
- not be used with factory-made renders without the prior approval of the render manufacturer.

The effect on the adhesion of subsequent render coats should be considered when water-repelling agents are used.

Plasticisers and air entrainers should comply with BS EN 934 and not be used in mortars containing masonry cement.

6.11.6.4 Coat thickness of site-made render

The number of coats should be designed to take account of the background and exposure conditions of the site.

The mix and its application should be suitable for the specific background. Items to consider include:

- the number and thickness of coats
- the strength of the coat (subsequent coats should be weaker than the background or the previous coat).

Render should have a nominal total finished thickness of not less than:

- 16mm for sheltered and moderate exposure zones, or
- 20mm for severe and very severe exposure zones.

Table 5: Site-made render designation and typical thickness

	Typical two-coat application
Normal density aircrete	
Undercoat	8-12mm designation iii (M4)
Final coat	6-8mm designation iv (M2) ⁽¹⁾
Ultra lightweight and lightweight aggregate blockwork	
Undercoat	8-12mm designation iii (M4)
Final coat	6-8mm designation iv (M2) ⁽¹⁾
Dense aggregate blockwork	
Undercoat	8-12mm designation ii (M6)
Final coat	6-8mm designation iii (M4)
Clay brick	
Undercoat	8-12mm designation ii (M6)
Final coat	6-8mm designation iii (M4)
Ribbed metal lath	
First coat	8-12mm designation i (M12)
Undercoat	10-12mm designation ii (M6)
Final coat	6-8mm designation ii (M4)

Notes

1. Designation iii (M4) should be used for the final coat in severe or very severe exposure zones.
2. For block classifications, see Table 2.
3. Specialist advice should be sought for low density aircrete backgrounds.

Where a three-coat render is used, this should include a second undercoat that is:

- the same thickness but a slightly weaker mix than the first undercoat, or
- a slightly thinner coat of the same strength mix.

6.11.6.5 Application of site-made render

When applying render, previous coats should be allowed to cure before applying the next coat (typically three to four days).

To avoid surface crazing:

- properly graded sand should be used with limits on fine sand proportions
- overworking (polishing) of the render should be avoided, as this causes laitance to be drawn to the surface.

Surfaces should be appropriately prepared to receive following coats. This can be achieved by either combing or scratching. The final coat should be applied to an undercoat that is suitably keyed.

The size of the background to be rendered should be assessed to determine if it can be rendered in the time available. This will help to establish the most suitable location for day joints.

The final coat should be of uniform thickness and not used to even out irregularities, which should be accommodated in previous coats.

6.11.6.6 Factory-made renders

Factory-made renders should be applied in accordance with the manufacturer’s recommendations, including those for ancillary components.

Factory-made renders with a declared mix in accordance with Table 4, applied to the thickness recommended in Table 6, and that otherwise comply with the recommendations for site-made renders, will generally be acceptable to NHBC.

Table 6: Minimum thickness of factory-made single-coat renders

Background	Sheltered and moderate exposure zone	Severe and very severe exposure zone
Single-leaf masonry wall	20mm	In accordance with the render manufacturer's recommendations
Masonry cavity wall partially filled	15mm	
Masonry cavity wall fully filled	20mm	
Lath ⁽¹⁾	15mm	

Notes

- Lath backgrounds generally require two coats.
- Alternative single-coat thicknesses may be acceptable when accompanied by appropriate third-party assessment in accordance with Technical Requirement R3.

6.11.6.7 Lime

Render mixes containing hydrated lime can improve the ability of the render to accommodate movement, improving resistance to cracking and crazing. The use of lime should be in accordance with BS EN 459.

Natural hydraulic lime (NHL) is used without cement, which can allow greater moisture vapour movement through the structure. Specialist advice may be required for the use of NHL render.

6.11.7 Detailing

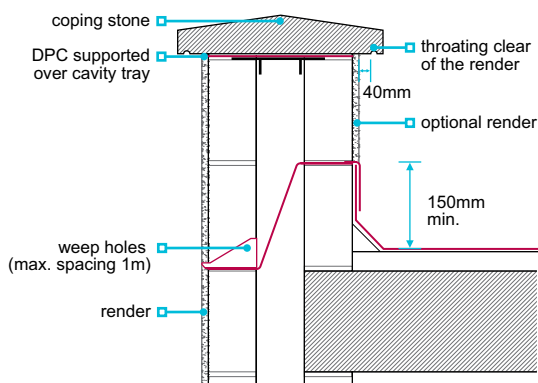
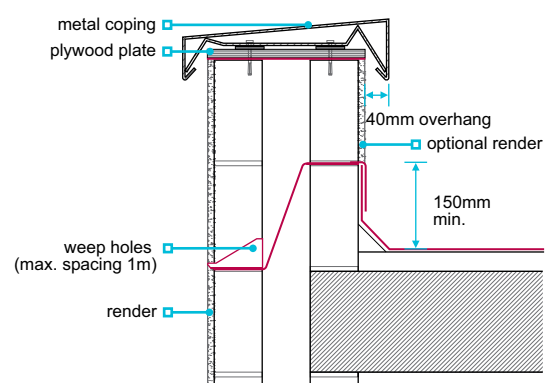
Rendering shall be detailed to ensure appropriate weathertightness and durability. Issues to be considered include:

- | | |
|--------------------------------|----------------------------------|
| 1) copings, cappings and sills | 5) exposed elements |
| 2) abutments and interfaces | 6) ancillary items |
| 3) weepholes | 7) render below the DPC |
| 4) detailing at openings | 8) resistance to sulfate attack. |

6.11.7.1 Copings, cappings and sills

Render should be protected from damage by copings, cappings or sills made of a material of low permeability or with suitably detailed DPCs. All copings, cappings and sills should have an efficient throat or drip on the underside which should be not less than 40mm away from the face of the rendered wall.

Extending sills or sub-sills beyond window reveals can help to disperse water and prevent staining.

Figure 3: Detailing of copings to protect render

Figure 4: Coping detail to protect render


6.11.7.2 Abutments and interfaces

Where raked roof abutments occur against a rendered masonry wall, preformed cavity trays and appropriate flashings should be provided. Clauses 6.1.17 and 7.2.20 contain guidance for stepped cavity trays and flashings to masonry walls.

Cavity trays with stop ends are required above all openings. Where required, a minimum of two weepholes per opening should be provided.

A site-made or preformed cavity tray should be provided at horizontal abutments with weepholes at maximum 1m centres.

Render abutting exposed features, such as stone string courses or quoins, should be finished neatly without gaps.

Abutments between render and exposed masonry should be detailed to prevent moisture passing in behind the render or adversely affecting the building.

When rendering into window or door frames, the render should be stopped against a bead and sealed, or a bead of sealant applied between the frame and render.

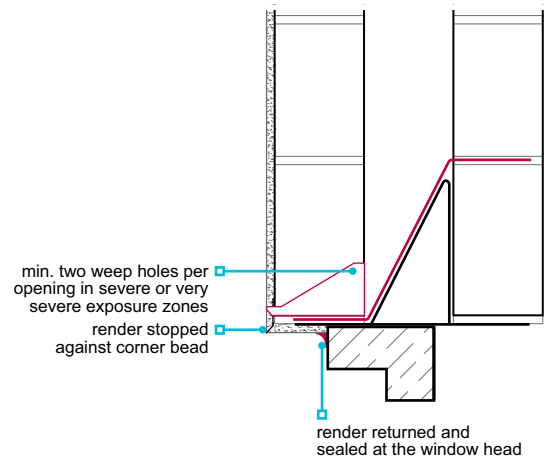
6.11.7.3 Weepholes

Weepholes should be provided:

- where required for ventilation to timber frame construction
- to cavity trays in parapet walls and horizontal roof abutments at not more than 1m centres
- to the last tray at stepped abutments
- in severe or very severe exposure zones where rendering is returned into the window or door head (weepholes are not required where the render is not returned).

To prevent staining, weepholes should be of a type which restricts the entry of wind-driven rain.

Figure 5: Provision of weepholes to window head



6.11.7.4 Detailing at openings

Design features around openings and at the head of the rendering should provide shelter and help shed water away from the surface below.

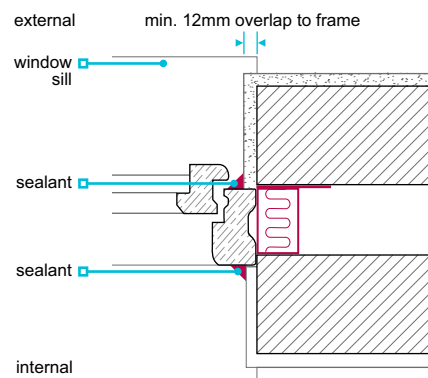
Checked rebates should be used in:

- Scotland
- Northern Ireland
- Isle of Man
- areas where the exposure to driving rain is very severe (severe/very severe exposure when building using timber frame).

Alternatively proprietary cavity closers which hold a satisfactory assessment by an appropriate independent technical approvals authority, accepted by NHBC, for the exposure zone may be acceptable.

Proprietary render systems should be detailed at abutments in accordance with the manufacturer's recommendations.

Figure 6: Checked rebate



6.11.7.5 Exposed elements

Render to exposed masonry elements, such as parapets, freestanding walls, pillars, retaining walls or chimneys, should be of a type appropriate for severe exposure conditions.

When rendering both sides of freestanding or parapet walls of single leaf construction, care should be taken to prevent damage caused by moisture becoming trapped. For example:

- the detailing should prevent the masonry from becoming saturated
- the wall should be protected from rain during construction
- rendering both sides of single leaf walls in areas of very severe exposure to frost attack should be avoided (see Clause 6.1.6c).

Bricks with S1 or S0 designation are not recommended for exposed elements that are to be rendered.

6.11.7.6 Ancillary items

Stop beads and render stops should be austenitic stainless steel or PVC. Long runs of steel beads and stops should be avoided due to their expansion potential.

Corner beads should have an appropriate projection to prevent thin tapering of the render which reduces its overall thickness.

Beads should be:

- adhesive-fixed using a material appropriate for external use and in accordance with the manufacturer's recommendations, or
- mechanically fixed using suitably durable fixings.

6.11.7.7 Render below the DPC

To prevent damage caused by prolonged periods of wetting, it is preferable to stop the render at DPC level. Where rendering is continued below the DPC, the following precautions should be taken:

- for site-made render, use a stronger mix (M4) that is sulfate resisting, or
- use factory-made render in accordance with the manufacturer's recommendations.

Consideration should be given to providing:

- appropriate drainage installed along the perimeter or ground falling away from the building
- adjacent surface finishes which do not promote splashing.

Admixtures may be required to enhance performance.

6.11.7.8 Resistance to sulfate attack

To prevent sulfate attack, the wall construction should restrict moisture from entering the background and having a detrimental effect on the performance of the render.

When detailing between the render and exposed brickwork, it is advisable to use appropriate materials resistant to, or without sources of, sulfate.

6.11.8 Render onto board backgrounds

Render onto board backgrounds shall be suitable for the intended use and detailed to provide satisfactory performance. Issues to be considered include:

- 1) provision of a system manual
- 2) compatibility between the render and background
- 3) fixing back to the structure
- 4) weather resistance
- 5) movement joints
- 6) board backgrounds.

6.11.8.1 Provision of a system manual

Where render is applied to a board background, the render manufacturer should clearly define the system in a manual, including:

- materials and components
- common details
- design guidance
- installation guidance.

The system should be used in full accordance with the manufacturer's guidance and third-party certification.

6.11.8.2 Compatibility between the render and background

The background should be appropriate for its intended use. Issues to be considered include:

- compatibility between the board and render
- durability classification of the board and its suitability for use in exterior conditions, including resistance to weather prior to the render being applied.

Render onto board backgrounds should:

- not be applied where the surface has contamination, dust or loose particles
- consider the effects of solar radiation (colour, orientation and shading)
- be mixed to ensure colour consistency where coloured pigments are specified
- be specified and used with the appropriate ancillary items, such as trims to form corners and returns.

Boards should not be left exposed prior to rendering for longer than is necessary.

6.11.8.3 Fixing back to the structure

Board backgrounds should be fixed back to the structure in accordance with the manufacturer's recommendations and third-party certification.

The fixing design should consider:

- negative (suction) and positive (pressure) wind loads
- pull-out strength
- pull-through resistance
- anticipated movement
- self-weight.

A suitably qualified and experienced chartered engineer should check that an adequate number of fixings are used to attach the system.

Fixing battens and rails should be installed vertically and not block drainage paths. Timber battens should be suitably treated.

To reduce the risk of damage from impact, especially at low level, where people have access around balconies and where cradle systems, etc can meet the façade, appropriate precautions such as closer supports should be considered.

Cavity barriers should be appropriately detailed to ensure satisfactory performance and:

- be provided in accordance with Building Regulations
- not block ventilation or drainage paths
- account for movement in the frame
- be used in accordance with the manufacturer's recommendations.

6.11.8.4 Weather resistance

Timber and steel framed backing walls should be protected with breather membranes and have a minimum 25mm cavity.

Cavities to timber framed walls should be drained and vented, and cavities to steel framed walls should be drained.

6.11.8.5 Movement joints

Movement joints should be provided to accommodate movement in timber frame structures. Where board backgrounds are used, movement joints should be:

- formed in accordance with the system manufacturer's recommendations
- continued through the background board
- positioned to accommodate calculated deflection or movement
- provided at floor zones.

6.11.8.6 Board backgrounds

Board backgrounds to be rendered should be external grade and recommended for use in the render manufacturer's system manual and third-party certification.

Boards should be set out in accordance with the system manufacturer's recommendations, taking account of possible compression, deflection and alignment of joints in relation to openings in the external wall, such as windows and doors.

The render should have alkali-resistant mesh embedded into the base coat across the whole surface.

Edges of boards should be suitably treated to provide protection from weather during construction and to maintain durability after the render is completed.

6.11.9 Finishes

Finishes shall be to a satisfactory standard. Issues to be considered include:

- 1) decorative finishes
- 2) appearance.

6.11.9.1 Decorative finishes

The choice of decorative finish should take account of:

- the exposure zone
- background movement potential.

Scraped or textured finishes can reduce the risk of crazing and can break up the drainage path of rainwater as it runs down the face of the wall.

Wet dash and dry dash finishes should have an aggregate size generally between 6mm and 14mm. Dry dash should be applied to the final coat before it has fully cured.

6.11.9.2 Appearance

Render on external walls should be reasonably consistent in texture, finish, colour and line. Clause 9.1.2.2 provides further guidance on tolerances to render finishes.

Consideration should be given to detailing that will avoid obvious staining (eg the positioning of discharge pipes).

Completed render should be protected from damage that could be caused by construction activities.

Render may not be resistant to staining and may require periodic maintenance such as cleaning.

6.11.10 Further information

- *BS EN 13914-1 Design, preparation and application of external rendering and internal plastering — External rendering*
- *BS 8000-0 Workmanship on construction sites — Introduction and general principles*
- *PD 6697 Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

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