

Rendering Aggregate Concrete Blocks

Application Guidance

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Introduction

Renderers have been applied very successfully to aggregate concrete block backgrounds for decades. Aggregate blocks provide a moderately strong to strong background with moderate suction and unless the blocks used were intended for direct decoration rather than a rendered finish (i.e. with a paint quality finish) also afford an excellent mechanical key. Problems with renders on aggregate blocks are extremely rare as they have all the characteristics needed for the easy application of a durable render.

Comprehensive guidance on external rendering was first published by the Cement and Concrete Association (C & CA) in 1948 and this guidance which went through several editions, has proved to be both reliable and authoritative leading to an updated version published by the Concrete Society as Good Concrete Guide No 3. The C & CA guidance did not cover the proprietary 1 and 2 coat renders which have been gaining in popularity and which can have different characteristics to traditional renders and therefore may need different guidance for their application although these were mentioned in the Concrete Society's guide.

This guidance note gives application guidance for the successful use of renders on aggregate blocks.

Block types and surface textures

For the purpose of this guidance note aggregate concrete blocks can be considered as falling into the following categories:

Block type	Block texture
Dense blocks	Standard texture
	Paint quality/close textured
Lightweight aggregate blocks	Standard texture
	Paint quality/close textured
Ultra lightweight aggregate blocks	Standard texture

Table 1 Block types and textures

For traditional and 2 coat polymer modified proprietary renders the ideal rendering background has moderate suction and a good mechanical key. Standard texture dense, lightweight aggregate and ultra lightweight aggregate blocks all have these characteristics.

Pre-treatments

Traditional renders and 2 coat polymer modified proprietary on standard texture blocks should require no pre-treatment.

Single coat proprietary renders on standard texture blocks should require no pre-treatment.

Pre-treatments or raking back mortar joints are advised on paint quality blocks using traditional renders and also may be necessary when using proprietary renders (See render manufacturer's literature).

Aggregate blocks should not be wetted prior to the application of renders.

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Block type	Background pre-treatment	Number of rendering coats
Dense (Standard)	None	2
Dense (Paint quality)	Stipple or spatterdash coat	2 + pre-treatment
Lightweight aggregate (Standard)	None	2
Lightweight aggregate (Paint quality)	Stipple or spatterdash coat	2 + pre-treatment
Ultra lightweight aggregate (Standard)	None	2

Table 2 Pre-treatments and rendering recommendations for traditional renders

Stipple coat:

A stipple coat mix should be prepared using one part of cement with one and a half parts of sharp sand made into a consistency of a slurry with water and a bonding agent such as styrene butadiene rubber (SBR). The mixture should be pushed into the surface with a coarse brush and then dabbed with a refilled brush to give a coarse finish which should be protected from rapid drying out for a day and then left for an additional day or two to harden before applying the first render coat.

Spatterdash coat:

A spatterdash coat mix should be prepared using one part of cement to 2 parts of coarse sand with just sufficient water containing a bonding agent such as styrene butadiene rubber (SBR) to form a thick slurry. The spatterdash should be thrown against the background with a small scoop to form a layer of 3-5mm thickness. The mix should be stirred regularly to prevent settlement. The spatterdash layer should be protected from rapid drying out for a day and then left for an additional day or two to harden before applying the first render coat.

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Block type	First coat	Final coat
Dense blocks and lightweight aggregate blocks of 10.4N/mm ²	ii/M6	iii/M4
Lightweight aggregate of less than 10.4N/mm ² and ultra lightweight aggregate blocks	iii/M4	iii/M4

Table 3 Render designations for traditional renders

Render designation	Cement: lime: sand with or without air entertainment	Cement: sand with or without air entertainment	Masonry cement: sand (cement filler other than lime)	Masonry cement: sand (lime cement filler)
ii/M6	1 : ½ : 4 to 4 ½	1 : 3 to 4	1 : 2 ½ to 3 ½	1 : 3
iii/M4	1 : 1 : 5 to 6	1 : 5 to 6	1 : 4 to 5	1 : 3 ½ to 4

Table 4 Render mix proportions by volume for traditional renders

Recommendations

We recommend for traditional 2 coat renders the undercoat being applied in a thickness not exceeding 15mm and the final coat being applied in a thickness of 5-7mm.

For proprietary 2 coat renders the manufacturer's literature should be consulted for base coat and final coat recommended thicknesses but these are generally similar to those for traditional renders.

Proprietary single coat renders may also be used on aggregate block backgrounds. These have often worked well but on several occasions single coat proprietary renders have failed. The cause of the failures has not yet been identified. Until it has and appropriate steps taken to avoid similar failures have been established we are unable to recommend the use of all proprietary single coat renders. We therefore recommend that the render manufacturer to be used is contacted to establish:

- Whether there is any history of problems with their product on masonry and
- Their preparation and application guidance for the background which should be followed strictly.

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Movement Joints

Aggregate blockwork for rendering should have vertical movement joints incorporated at centres not exceeding 9m. Distances between joints should be measured around corners as these occur (see the CBA movement joint data sheet for more specific guidance). Low panels such as found above and below openings should be reinforced with welded wire type (ladder type) bed joint reinforcement.

Movement joints may be hidden behind building features such as down pipes. Where this spacing is not possible and expressed movement joints are not desired it is possible to use welded wire type (ladder type) bed joint reinforcement to extend the distance between movement joints. One course of bed joint reinforcement should be included 2 courses from the top of the masonry panel, 2 courses from the bottom of the masonry panel and one course at approximately mid panel height.

Movement joints in the background blockwork should be carried through the render and be formed using stainless steel render stop beads.

Good practice

- Weather conditions play an important role in the bonding and durability of rendered finishes. In hot weather or where the wind can dry out the render too rapidly the work should be kept damp for the first 3 days by the use of protective sheeting. The same protection is needed from driving rain and freezing conditions. Where sheets are used, make sure that they are hung away from the wall as chafing and scuffing can mark the appearance of the finished work.
- Provision should be made for external fixings, brackets and supports prior to commencing work.
- Corner beads and stop beads should be suitable for external work.
- Mortar joints should be left rough and not stuck off or tooled. Some close textured backgrounds may need the joints to be raked.
- Cement, lime, sand mixes with or without air entrainment are preferred.
- Sands in accordance with BS EN 13139 should be used. Sands that are too fine tend to have a high water demand.
- Mixes should be accurately gauged, the ingredients being thoroughly mixed before adding the water. The minimum amount of water that will result in a workable mix should be used.
- Two coats are recommended. The first coat must be thicker than the second coat. The first coat should not exceed 15mm. The second coat should be 5-7mm thick.
- Design detailing should ensure that there are good overhangs from eaves, sills and other projections in order to throw rain away from walls.
- Rendering must not bridge the dpc.
- Where movement joints occur they should continue through the render. Good detailing will help ensure that movement joints do not look out of place.

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