

Blockwork & Plastering

Detailing

In order to produce a high quality durable and uniform finish to plaster applied over existing blockwork the following precautions are recommended:

- All movement joints in blockwork should be carried through the plaster to avoid potential cracking.
- As joints will always show up eventually, it is important that they are concealed or tied in with some feature of the building.
- The surface of the blocks should be clean and free from loose mortar.
- All mortar joints should be raked to a depth of 10mm.

Workmanship

Plaster is usually applied in three layers:

- **Scud Coat** This is best applied by throwing the mixture onto the surface of the wall from a hand scoop. The wall surface should be covered with a single layer of scud coat 3 to 5mm thick and no steps should be taken to smooth the surface. This provides a good key and uniform suction for later work.
- **Undercoat** This is the most important part of a rendering in keeping out the rain. It should not exceed 12mm in thickness. Always comb fresh undercoats to provide a sufficient key for the next coat.
- **Outer Coat** This should be either a weaker mix or thinner than the under coat. In general, it should be less than 10mm in thickness.

As a rule, to avoid failure due to shrinkage and loss of bond, successive plaster coats should be no stronger than the previous coat (or background); this is achieved either by reducing the strength of the mix or by reducing the thickness of the later coat.

Textured Finishes

Roughcast finishes – known also as wet dash – are the most popular of the textured finishes and provide excellent weather protection. The mix is thrown onto the wall with close attention to achieving a wide even spread and obtaining uniform texture.

Alternatively, decorative finishes can be produced by the use of trowels and other small tools on the surface of the fresh plaster.

Remember!

- Use Irish Cement, which has been stored in dry conditions.
- Use only clean sharp sand found to perform well locally.
- Do not use fresh blocks.
- Prevent plaster from rapidly drying out, particularly in sunny weather.
- Always allow a minimum of 2/3 days between the applications of successive coats of plaster.
- Never apply strong plaster over weak undercoats.
- Advisory Engineers are always available to advise on issues relating to blockwork and plastering.

Storage

Bagged cement should be stored on a raised platform in dry conditions, covered with plastic sheeting. Bags should not be stacked higher than about 1.5m.

Care in use

A health and safety data sheet, giving practical guidance on handling cement, is available from our Technical Marketing department, or on our website.

Irish Cement Series

- 1 **Mixing and Placing Concrete**
- 2 **Blockwork and Plastering**
- 3 **Precast Concrete Paving**
- 4 **Floor Screeds**
- 5 **Concrete on the Farm**

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Introduction

Concrete blockwork, either plastered or fairfaced, is a common form of wall construction in Ireland. A wide range of block types and sizes are available which provide varying levels of performance.

The advice in this leaflet has been produced by the Technical Marketing Department of Irish Cement Ltd. and is based on considerable experience of blockwork and plastering. It gives practical details about materials and mixes and outlines important aspects of detailing and workmanship.

The recommendations are applicable to both large and small jobs and the publication is supported by an Advisory Service freely available to discuss special problems.

Before starting even the smallest job, one should always:

- Plan the job carefully.
- Select mortar and plaster mixes suitable for their intended application.
- Use only quality materials which have been proven under local conditions.

Blockwork

A little advance planning can greatly simplify and improve the work. Always provide adequate storage space and keep blocks, cement and lime dry prior to use. Make sure that the foundation provides a level surface on which to lay the first course of blocks and with sloping sites, provide steps equal to the height of a single block at appropriate points. Arrange overall dimensions and openings to minimise the necessity for cutting blocks.

Materials

Use only good quality materials. Do not use freshly made blocks and protect blocks in storage from rain and moisture. Fresh or damp blocks greatly increase the risk of cracking. Use only clean sand already found to be satisfactory and protect it from contamination with clay. If using plasticisers as a replacement for lime, use proprietary materials designed for use in mortar and do not use substitute materials sold for other applications. Recommendations for the mixes are provided in Table I.

Table I Mix proportions by volume

Mortar mix	Proportions
Cement: Sand + Plasticiser	1:5-6
Cement: Lime: Sand	1:1:6

Improved workability is obtained by preparing the lime/sand mix the day before and adding cement in proportion 1:6 immediately before use.

Aids to Workmanship

Care in lining, plumbing and levelling the first course of blockwork greatly simplifies subsequent work. When this is complete, build up all corners for 4 or 5 courses. Sections of walling between corners are then completed from each end using a string line and level to guide the work. Only small quantities of mortar should be spread in advance so that the blocks can be finally bedded before the mix loses workability. With double leaf walling, care is necessary to prevent mortar entering and bridging the cavity. In winter, always protect sand, blocks and mortar from frost.

Detailing

All building materials shrink and expand slightly due to moisture and temperature variations. To accommodate these movements in blockwork, joints should be provided in accordance with the following recommendations:

- Free standing walls should incorporate joints at a spacing of not greater than 6m.
- Walls less than 1.5m high should incorporate joints at a spacing of not greater than 4m.

To minimise the risk of shrinkage cracking occurring around doors and windows the following precautions are recommended:

- Use the correct mortar mix in accordance with Table I.
- Protect all blockwork during construction.
- Avoid the use of fresh blocks.
- Incorporate expanded metal in all mortar joints immediately above and below openings.

Prestressed concrete lintels should be built in with the textured surface uppermost. They act structurally with the blocks and

there must be an adequate depth of bonded solid blockwork above for satisfactory performance. Blockwork should not be used in the construction of containment structures without the advice of a structural engineer.

Plastering

Externally, plaster or render correctly applied provides excellent protection under even the most exposed conditions. Inside buildings it gives hardwearing easily cleaned and hygienic wall surfaces.

Materials and Mix Proportions

Cement, sand and water, together with admixture or lime for workability, are the typical materials used for plastering. The use of a clean sharp plastering sand has a fundamental influence on the finished quality.

Recommendations for the normal range of mixes are provided in Table II.

Table II Mix proportions by volume

Mortar mix	Proportions
Scud Coat Cement: Sand	1 : 2-2.5
Undercoat and Finish (external use) Cement: Sand+Plasticiser Cement:Lime: Sand	1:4 1 : 0.5 : 4-4.5
Undercoat and Finish (internal use) Cement: Sand	1 : 3
Roughcast (Wet Dash) Cement: Lime:Sand: Pebble	1 : 1.5 : 2 :5-6

Local practice may indicate slight adjustments to the proportions given. Caution should be exercised in the use of richer mixes due to the risk of cracking.

Normally, scud followed by undercoat and finish is adequate. For increased protection and on exposed sites, apply a second undercoat. Increasing the thickness of individual plaster coats does not provide extra protection and is not recommended.

Premixed dashing mixes incorporating lime are available in some areas. They reflect local tradition and are usually gauged 1: 6-7 with cement.