



Break the mould

Concrete blocks feature in most construction projects, and working with them poses a number of hazards to workers. Play your part in helping to reduce the risks, with the help of our guide.

The hazards

The main hazard associated with handling heavy concrete blocks is musculoskeletal injury, such as damage to the back or upper limbs. The effects of manual handling are often cumulative – which is why a 20-kilogram limit is recommended on blocks that are handled repeatedly.

Other hazards associated with concrete blocks include:

- **Exposure to noise, when ties are connected by shot-firing**
- **Contact hazards from protruding ties**
- **Structural stability problems**
- **Working in an awkward posture**

Life outside the tick box.



Reducing the lifting hazard

Try to limit the weight of concrete blocks in your design to 20 kilograms, and consider the use of alternative materials as a way of achieving this. Cellular and hollow blocks, for example, have identical properties to concrete but are lighter and safer to handle.

You could also specify construction methods that allow for the use of lighter materials. For example:

- **Lay blocks flat in order to achieve the 190 or 215mm thickness needed for plastering**
- **Use collar-jointing to form a 190 – 215mm wall. This involves laying blocks back to back in normal construction, incorporating a 10 – 15mm mortar joint between the adjoining faces, and tying the leaves together with brick ties or bed joint reinforcement. It is not suitable for party walls**
- **Use lightweight blocks and cavities to satisfy the Building Regulations governing internal sound insulation**
- **Use reinforced hollow-block wall construction to achieve strength in basement structures. This involves passing a reinforcing bar through the block and filling the voids with concrete. The result is a composite action between the block and the reinforcement**

Help with lifting

If you cannot avoid the use of concrete blocks weighing more than 20 kilograms, you should draw the contractor's attention to this. That way, the contractor can ensure that two people are on hand to lift the blocks, or that mechanical handling equipment is available.

Where appropriate to the design, you should also consider sourcing blocks that utilise built-in lifting aids.

Further guidance about manual handling is available in CON301 **Manual handling and vibration**, and background information can be found in CON301.1 **Manual handling information**.

Noise

Where it is necessary to tie walls together, specify blocks that have built-in ties. This eliminates the need for ties to be shot-fired to blocks on-site. See CON303 **Noise management** for more information.

You should also try to specify blocks that do not need to be cut to size on site. If this is not possible, and a lot of cutting is required, alert the contractor.

Contact

It is difficult for designers to prevent contact hazards, as they tend to arise while workers move around the construction site. Even so, you should specify blocks with built-in ties that can be bent upwards, to reduce the risk of contact.



Structural stability

'Green' blockwork is susceptible to collapse. This risk is especially pronounced when blockwork cannot be built in conventional two-metre lifts.

Blockwork can also become unstable if it is loaded before achieving sufficient strength. To help mitigate this risk, you should:

- **Give clear information to the contractor about when walls can be fully loaded**
- **Clearly state the loads walls can bear in the early stages of construction**
- **State on your drawings that PC floor or roof units need to be supported by the full width of the inner leaf of external cavity walls**
- **Check that floors are capable of bearing the loads of any props used**

Instability can arise when infill panels are not properly tied in to the framing members. So, your instructions to the contractor should emphasise the importance of tying-in.

You should also make the specification of your chosen mortar clear, to ensure that the structure is well supported.

Working in an awkward posture

Block-layers are sometimes required to assume awkward postures while working, which can exacerbate the risk of musculoskeletal injury and lead to discomfort.

Designers should reduce this risk by leaving penetrations in walls where ducts and services will be installed at a later date. These gaps, which should have whole-block dimensions, can subsequently be filled with appropriate sound- and fire-retardant material.

This is preferable to incorporating such items in the initial build, and forcing workers to operate around them while constructing the internal wall.

Why use big blocks?

Concrete blocks that weigh more than 20 kilograms are often needed to meet clients' specific requirements. These include:

- **A need for greater structural stability**
- **A requirement for above-average fire resistance**
- **Acoustic performance criteria (e.g. in concert halls)**
- **A need for shielding from radiation**

Blocks away: a guide to the market

The market for concrete blocks is divided into two sectors:

- **Aggregate concrete blocks, which take about 70 per cent of the market. Of these, 95 per cent weigh 20 kilograms or less**
- **Aerated concrete blocks, which take up the remaining 30 per cent of the market**

Life outside the tick box.

Useful resources

Guidance Notes on the Use of Dense Concrete Masonry (Concrete Block Association)
Manual Handling Operations 1992 – Guidance on Regulations (HSE)
HSE Busy Builder series of leaflets

See elsewhere on SID:

CON301 Manual handling and vibration
CON301.1 Manual handling information
CON303 Noise management

