

Chapter 6.3

Internal walls



6.3 Internal walls

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SCOPE

This Chapter gives guidance on meeting the Technical Requirements and recommendations for internal walls, including separating walls and compartment walls.

DESIGN STANDARDS

6.3 - D1 Design shall meet the Technical Requirements

Design that follows the guidance below will be acceptable for internal walls, including separating walls and compartment walls.

STATUTORY REQUIREMENTS

6.3 - D2 Design shall comply with all relevant statutory requirements

Design should be in accordance with relevant Building Regulations and other statutory requirements.

LOADBEARING MASONRY WALLS

6.3 - D3 Loadbearing masonry internal walls shall be designed to support and transfer loads to foundations safely and without undue movement

Structural design of masonry walls should be in accordance with BS EN 1996-1-1

Items to be taken into account include:

(a) provision of foundations

Any loadbearing wall should be provided with either:

- a foundation, or
- a means of support that transfers the load safely to a foundation.

Sleeper walls should be designed and constructed as described in Chapter 4.4 'Strip and trench fill foundations' (each section).

Where necessary, oversite concrete should be protected against sulfate attack by the use of a polyethylene sheet dpm, not less than 1200 gauge (0.3mm), (or 1000 gauge (0.25mm) if assessed in accordance with Technical Requirement R3) properly lapped.

Loadbearing walls built off a concrete groundbearing slab are acceptable only if the concrete forms part of a foundation which is designed by an Engineer in accordance with Technical Requirement R5.

Foundation design should take account of any site investigation or ground hazards.

(b) structural elements

Bricks and blocks should be selected in accordance with their intended use. The table below gives recommended strengths of bricks and blocks to be used in buildings up to 3 storeys high:

Height of wall	Minimum compressive strength of brick or block unit	
1 or 2 storeys	blocks	- 2.9N/mm ²
	bricks	- 9.0N/mm ²
Lowest storey of a 3 storey wall or where individual storeys exceed 2.7m	blocks	- 7.3N/mm ²
	bricks	- 13.0N/mm ² (unless calculations show that lower strengths are suitable)
Upper storeys of 3 storey wall	blocks	- 2.9N/mm ²
	bricks	- 9.0N/mm ²

(c) lateral restraint

Loadbearing walls, including separating walls should be provided with lateral restraint:

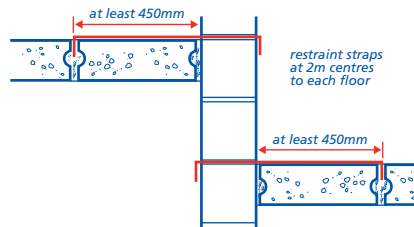
- at each floor level, and
- at the ceiling level below a roof.

Concrete floors provide adequate restraint if:

- they have a minimum 90mm bearing onto the wall, or
- they abut each side of the wall (provided that both floors are at, or about, the same level).

Restraint straps should be provided at 2m centres to each floor when:

- floors are not at, or near, the same level, and
- the floor span is parallel to the wall, and
- the floor is not built into the wall.



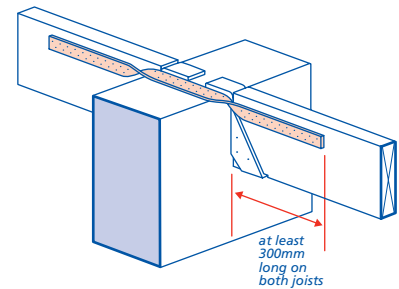
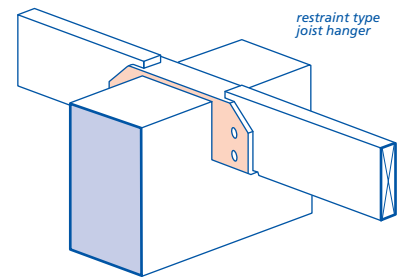
Timber joists with a minimum of 90mm bearing normally provide adequate lateral restraint.

Where timber joists are not built into a masonry wall, restraint should be provided at 2m centres by means of either:

- restraint type joist hangers to BS EN 845-1 with performance equivalent to a restraint strap, or
- restraint straps with a cross section of at least 30mm x 5mm.

Where restraint is required and restraint-type hangers are not used, straps should be:

- at least 300mm long on each joist
- fixed with four fixings to each joist
- not more than 2m apart.



Where permitted, timber joists built into separating walls may provide lateral restraint but care should be taken to ensure that sound insulation and fire resistance requirements are also met. See Clauses D7 and D9.

(d) bonding and tying

Where a separating wall abuts an external wall they may be tied or bonded together.

Tied joints should be formed using expanded metal strip, wall ties or equivalent fixings, at maximum 300mm vertical centres.

The external wall cavity should be closed at the junction with the separating wall with a flexible cavity stop, unless the cavity is fully filled with built-in insulation (where permitted).

(e) movement joints

For guidance on the design of movement joints, reference should be made to Clause D8.

(f) wall ties for cavity separating walls

Normally, the two leaves of a masonry cavity separating wall should be tied together to provide structural stability. The type of tie and spacing should limit the sound transmission across the cavity. Reference should be made to Clause D9 for details.

In England and Wales, separating walls may be built in accordance with Robust Details "Resistance to the passage of sound".

LOADBEARING TIMBER WALLS

6.3 - D4 Loadbearing timber internal walls shall be designed to support and transfer loads to foundations safely and without undue movement

Structural design of loadbearing timber walls should be in accordance with BS EN 1995-1-1

Structural timber should be specified according to the strength classes in BS EN 338, eg C16 or C24. When using the BS 4978 grading rules, the timber species should be in accordance with BS EN 1912 or strength class specified. The strength classes can then be determined from BS EN 338

Items to be taken into account include:

(a) provision of foundations

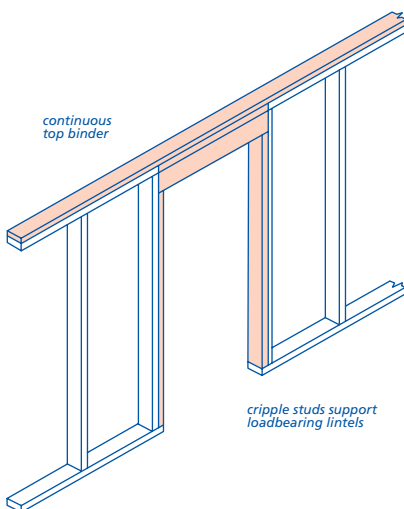
Foundations should be provided as for structural masonry walls (see Clause D3(a)).

(b) structural elements

Normally, individual studs, sills and headplates should be 38mm x 75mm. Larger timber section sizes may be required in order to achieve an adequate level of fire resistance. Stud spacing should be spaced at maximum 600mm centres.

A lintel and cripple studs should be provided to any opening except when the stud spacing is unaffected. Normally, multiple studs should be provided to support multiple joists.

Where internal walls are made up of panels, structural continuity should be maintained, for example by the use of a continuous top binder.



Framing joints should be secured with not less than two nails per joint.

(c) wall ties for cavity separating walls

For timber framed separating walls, ties should be specified in accordance with the system designer's recommendations. The

type of tie and spacing should limit sound transmission across the cavity.

To limit sound transmission, metal tie straps should be:

- not more than 3mm thick
- fixed below ceiling level
- spaced at least 1.2m apart horizontally.

Thicker ties, fixed at ceiling level or more closely spaced will increase sound transmission across the cavity.

BEAMS AND LINTELS

6.3 - D5 Beams and lintels shall be adequate for their purpose

Items to be taken into account include:

(a) loads and spans

Loads and spans should be either in accordance with manufacturers' recommendations or designed by an Engineer in accordance with Technical Requirement R5.

(b) materials

Concrete or steel lintels are suitable for use in masonry walls. Timber lintels should not be used to support masonry.

Lintels should extend beyond each end of openings in masonry as follows:

Span [m]	Minimum length of bearing [mm]
Up to 1.2	100
Over 1.2	150

Where structurally necessary, padstones should be provided under the bearings of lintels and beams. Reference should be made to Chapter 6.5 'Steelwork support to upper floors and partitions'.

NON-LOADBEARING INTERNAL PARTITIONS

6.3 - D6 Non-loadbearing partitions shall have adequate strength and be adequately supported

Items to be taken into account include:

(a) partition construction

The following constructions are acceptable:

- partitions of brick or block construction
- timber stud partitions using studs, sills and headplates nominally 63mm x 38mm. Studs should be spaced to suit the thickness of plasterboard used, as follows:
 - not more than 450mm spacing for 9.5mm boards
 - not more than 600mm spacing for 10mm to 20mm boards

- proprietary partitions of plasterboard, strawboard or other material, detailed and constructed in accordance with manufacturers' recommendations.

(b) movement joints

Reference should be made to Clause D8.

(c) method of supporting partition

Walls and partitions should be supported by the structural floor, not by a floating floor that incorporates a compressible layer, unless the material is specifically manufactured for that purpose.

Preferably, masonry partitions should be supported on:

- other masonry partitions or walls (wherever possible the design of dwellings should be such that first floor masonry partitions are a continuation of those on the ground floor)
- concrete floors
- steel or concrete beams.

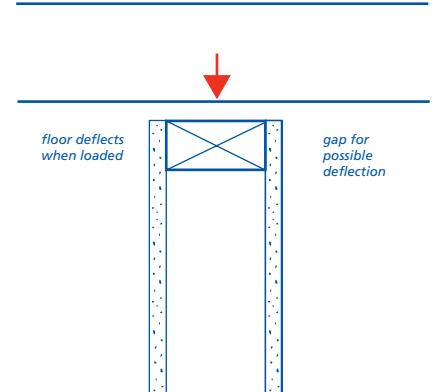
Where steel or concrete beams are to be used, it may be necessary to use padstones at bearings.

Masonry partitions should not be supported by timber joists or beams, unless they have been designed by an Engineer in accordance with Technical Requirement R5.

The design should make allowance for the relatively flexible nature of the timber and the relatively rigid nature of masonry.

Where stud partitions or proprietary plasterboard partitions are supported by a timber floor, extra noggings or joists should be specified, unless it can be shown that the deck can transfer the load without undue movement.

Allowance should be made for the possible deflection of floors at the head of partitions to prevent the partition becoming loadbearing.



FIRE RESISTANCE

6.3 - D7 Internal walls shall, where necessary, have adequate resistance to the spread of fire

The guidance below applies in England, Wales, Northern Ireland and the Isle of Man. In Scotland, reference should be made to statutory requirements.

Items to be taken into account include:

(a) fire resistance of internal walls

In houses up to 2 storeys, the following walls should be fire-resisting:

- loadbearing walls (half-hour minimum)
- separating walls (one hour minimum)
- walls between a house and an integral or attached garage (half-hour minimum).

In houses of 3 or more storeys, in addition to the above, the walls enclosing the staircase should have half-hour fire resistance.

For flats, the following walls should be fire-resisting:

- loadbearing walls within the flat (half-hour for up to 2 storeys, one hour for 3 or more storeys)
- separating walls, compartment walls and walls enclosing protected shafts, such as staircases (normally one hour)
- other walls enclosing hallways within flats, half-hour.

(b) fire-stopping

Fire-resisting walls should be fire-stopped or constructed to resist fire spread:

- at their perimeter
- at junctions with other fire-resisting walls, floors and roofs
- where openings are formed for doors, pipes, etc.

The following details should be designed carefully:

- the junction between a separating or compartment wall and a pitched roof or a flat roof
- where pipes and cables penetrate a fire-resisting wall (reference should also be made to Chapter 8.1 'Internal services' (Design and Sitework)).

The wall dividing an integral or attached garage and the floor above should act together to provide adequate resistance to fire spread. If there is either no ceiling or no floor to the space above the ceiling to the garage, vertical fire separation may be required.

When fire-stopping against timber construction, it is important to specify compressible material, such as mineral wool, to allow timber shrinkage to take place without affecting the fire-stopping.

(c) provision of cavity barriers

All internal walls of hollow or cavity construction, whether fire-resisting or not, should have cavity barriers installed at their perimeter and at junctions with fire-resisting floors and walls.

For cavity separating walls of masonry construction, the top of the wall needs to be closed for fire resistance.

Timber framed separating walls should be specified with cavity barriers of wire reinforced mineral wool at junctions with floors and ceilings. Reference should be

made to Chapter 6.2 'External timber framed walls' for further information.

MOVEMENT JOINTS

6.3 - D8 Masonry walls shall, where necessary, be provided with movement joints

Movement joints should be provided in straight unbroken lengths of wall as shown in the following table:

Type of brick or block	Joint width [mm]	Normal spacing
Clay brick	16	12m (15m max)
Calcium silicate brick	10	7.5 to 9m
Concrete block and brick	10	6m

Movement joints in foundations should be continued through the superstructure.

SOUND INSULATION

6.3 - D9 Internal walls shall, where necessary, have adequate resistance to the transmission of sound

Items to be taken into account include:

(a) all separating walls

In England and Wales, separating walls may be built in accordance with Robust Details Part E "Resistance to the passage of sound".

For details of separating walls in timber frame construction, reference should be made to Chapter 6.2 'External timber framed walls'.

To ensure an adequate level of sound insulation for masonry separating walls:

- statutory requirements may permit the building in of joist ends into separating walls. Where permitted there should be a mortar joint around the joist perimeter and the face of the joint pointed with silicone sealant
- all joints in the separating wall should be fully filled with mortar
- flexible cavity stops should be provided at the junction of separating walls with external walls
- avoid any reduction in the thickness of masonry, but where this is unavoidable, eg to accommodate electrical sockets, positions on opposite sides of the separating wall should be staggered.

Care should be taken when specifying dry lining to masonry separating walls. The thickness of plasterboard layers, the method of fixing and sealing may be critical. For fixing details, reference should be made to BS 8212.

(b) cavity separating walls

Cavity separating walls should be constructed so that any external cavity wall insulation placed by blown or pumped

methods, where permitted, cannot enter the separating wall cavity.

In masonry cavity separating walls, where the cavity is up to 75mm, flexible wall ties should be used, such as:

- butterfly type ties, or
- ties assessed for the purpose.

Where structural design permits, the omission of ties will enhance sound insulation.

Ties should be spaced 900mm horizontally and 450mm vertically. Closer spacing will increase sound transmission. Wider spacing may impair structural stability. Rigid ties transmit sound more readily than flexible ties.

Chases for services should be kept to a minimum and be well filled with mortar.

(c) flanking transmission

The construction of the flanking wall, including the position of openings in it, will have an impact on sound transmission. The requirements of statutory regulations should be followed.

(d) partitions to rooms containing a WC

The guidance below applies in Scotland, Northern Ireland and the Isle of Man. In England and Wales reference should be made to statutory requirements.

PARTITION PERFORMANCE

Any partition between a room containing a WC and a living room, dining room, study or bedroom should have a weighted sound reduction index of not less than 38dB over the frequency range 100-3150Hz, when tested in accordance with BS EN ISO 140-4. This does not apply to a partition between a WC and a bedroom where the WC forms an en-suite facility to the bedroom.

The following methods of construction will achieve the performance level stated above.

BLOCKWORK PARTITIONS

Blocks having a density of not less than 600kg/m³ finished on both sides with 13mm of plaster are acceptable.

Blockwork should be tied in every course to adjoining walls, with the joints filled solid.

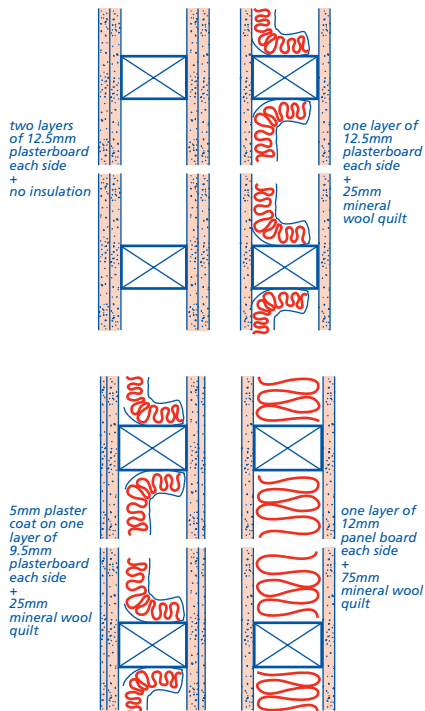
For details of bonding and tying, reference should be made to Sitework clause 6.3 - S3(d).

TIMBER STUDWORK

Timber studwork is acceptable if used with one of the following combinations of materials:

6.3

Internal walls



Other forms of timber studwork construction will be acceptable provided the criteria given under PARTITION PERFORMANCE is achieved and independent evidence of performance is available at the request of NHBC.

Where two thicknesses of board are used, the joints should be staggered and the joints in the outer layer properly filled.

Top plates, bottom plates and end studs should be secured and sealed to the adjoining structure so that sound paths cannot develop following shrinkage and/or deflection of the timber.

PROPRIETARY PARTITIONS

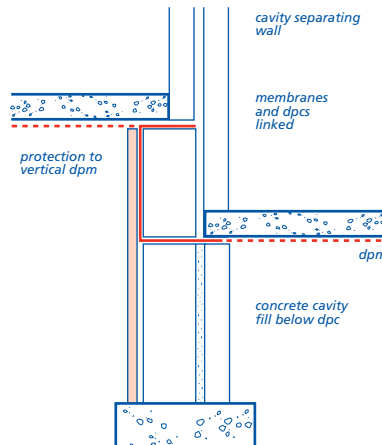
Certain proprietary partition systems meet the required standard. The partition manufacturer should have independent test evidence of the system's performance.

DAMP-PROOFING

6.3 - D10 Internal walls shall be designed to provide adequate resistance to moisture from the ground

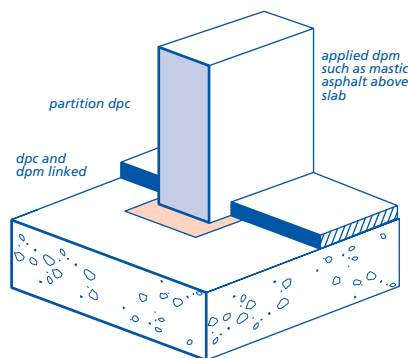
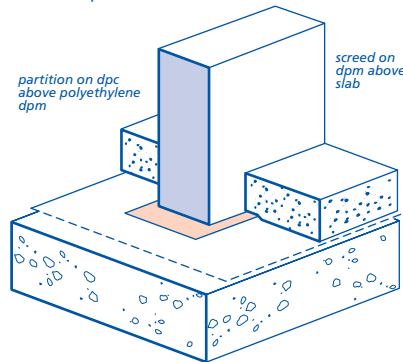
Loadbearing walls built off foundation walls should have a dpc at their base at least the width of the wall. The dpc should link with any adjoining dpm.

Where steps are necessary in the ground floor slab, a dpc should be incorporated as a continuous link between the upper and lower dpcs. The vertical part of the dpc should be protected from damage during construction.

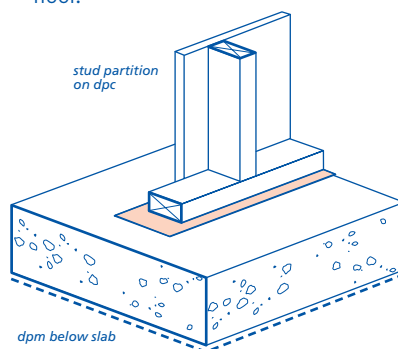


Dpcs should be included below the following:

- non-loadbearing partitions built off an in-situ ground slab with a dpm applied to the top of the slab



- partitions that may be adversely affected by residual damp (eg stud partitions) built off any type of concrete floor.



FIREPLACES AND FLUES

6.3 - D11 Fireplaces and flues

See Chapter 6.8 'Fireplaces, chimneys and flues'.

PROVISION OF INFORMATION

6.3 - D12 Designs and specifications shall be produced in a clearly understandable format and include all relevant information

Drawings should give full information, including:

- wall layout, with all dimensions shown
- position and size of openings and lintels
- details at junctions, indicating fire-stopping where applicable
- details of wall constructions and materials, ties and restraints
- details of foundations where required.

6.3 - D13 All relevant information shall be distributed to appropriate personnel

Ensure that design and specification information is issued to site supervisors and relevant specialist subcontractors and/or suppliers.

Where proprietary components are to be used, manufacturers usually have specific requirements for fixing and/or assembly of their products. This information should also be made available for reference on site so that work can be carried out satisfactorily in accordance with the design and specification.

MATERIALS STANDARDS

6.3 - M1 All materials shall:
(a) meet the Technical Requirements
(b) take account of the design

Materials that comply with the design and the guidance below will be acceptable for internal walls, including separating walls and compartment walls.

Materials for internal walls should comply with all relevant standards, including those listed below. Where no standard exists, Technical Requirement R3 applies (see Chapter 1.1 'Introduction to the Standards and Technical Requirements').

References to British Standards and Codes of Practice include those made under the Construction Products Directive (89/106/EEC) and, in particular, appropriate European Technical Specifications approved by a European Committee for Standardisation (CEN).

MASONRY MATERIALS

6.3 - M2 Masonry shall comply with relevant standards

Items to be taken into account include:

(a) precast concrete blocks

Concrete blocks should comply with BS EN 771.

When used in loadbearing partitions, blocks should have the minimum compressive strength required by the design. The table below gives recommended strengths of blocks to be used in specific cases:

Height of wall	Minimum compressive strength of block unit
1 or 2 storeys	blocks - 2.9N/mm ²
Lowest storey of a 3 storey wall or where individual storeys exceed 2.7m	blocks - 7.3N/mm ² (unless calculations show that lower strengths are suitable)
Upper storeys of 3 storey wall	blocks - 2.9N/mm ²

Where buildings are more than 3 storeys in height, masonry should be designed in accordance with Technical Requirement R5 using the block strength specified by the designer.

The maximum loadbearing capacity of the wall should not exceed the recommendations of the manufacturer.

In some partitions to WC compartments and all separating walls, blocks should have at least the minimum density required by the design in order to achieve the required sound insulation.

Where special blocks/pipes are used for flues, the manufacturer's recommendations should be checked. Special materials may be required around the blocks/pipes.

(b) bricks

Bricks should comply with the relevant British Standards:

- clay bricks should comply with BS EN 771-1
- calcium silicate bricks should comply with BS EN 771-2
- concrete bricks should comply with BS EN 771-3.

When used in a separating wall, bricks should have at least the minimum density required by the design. A lighter brick may not provide a suitable level of sound resistance.

For bricks suitable for use in chimneys reference should be made to Chapter 6.8 'Fireplaces, chimneys and flues'.

(c) mortar

A mortar of 1 : 1 : 5½, cement : lime : sand, with plasticiser is suitable for both internal and external walls.

Unless otherwise specified by the brick or block manufacturer, ordinary Portland cement to BS EN 197 may be used. Sulfate-resisting Portland cement should be used, where necessary (see Chapter 6.1 'External masonry walls' (Materials)).

Admixtures, retarded mortars and pre-mixed mortars may be used in accordance with the manufacturer's recommendations, provided those of the masonry manufacturer agree.

WALL TIES AND RELATED ITEMS

6.3 - M3 Walls ties and related items shall be of the appropriate type and strength and shall have adequate durability

WALL TIES FOR SEPARATING WALLS

Wall ties should either:

- be butterfly type, or
- have been tested to show that their design meets with statutory requirements.

Wall ties for timber frame separating walls should be not more than 40mm x 3mm in cross section.

HANGERS, STRAPS, ETC

Joist hangers, restraint straps, bond ties, etc should be protected against corrosion. Ferrous metals with the following levels of protection are acceptable:

- post-galvanizing to BS 729, or
- pre-galvanizing to BS 2989.

Restraint straps for use in masonry construction should have a minimum cross section of 30mm x 5mm.

TIMBER

6.3 - M4 Timber shall be of the appropriate grades and sizes to support the imposed loads

Preferably, regularised timber should be used for stud partitions. Structural timber should be specified according to the strength classes in BS EN 338, eg C16 or C24. When using the BS 4978 grading rules, the timber species should be included in accordance with BS EN 1912 or class strength specified. The strength class can then be determined from BS EN 338.

Finger joints should comply with BS EN 385 and timber for dry lining with BS 8212.

6.3 - M5 Timber shall have a suitable moisture content

To minimise drying shrinkage, timber should have a moisture content not greater than 20%.

Structural softwood for internal use should be dry graded to BS 4978 and marked 'DRY' or 'KD'.

PLASTERBOARD

6.3 - M6 Plasterboard shall be of a suitable thickness for its intended use

Plasterboard should be to BS 1230.

Plasterboard thickness should be:

- 9.5mm for stud spacing up to 450mm
- 12.5mm for stud spacing up to 600mm.

For sound-resisting walls (separating walls and walls to WC compartments), the correct thickness, number of layers of plasterboard sheets and sealing should be specified (see Design clause 6.3 - D9).

Tapered edge boards should be used where the plasterboard is to be jointed only before decoration.

Dry lining systems should comply with BS 8212. Reference should be made to Chapter 8.2 'Wall and ceiling finishes' (each section) for further details.

PROPRIETARY SYSTEMS

6.3 - M7 Prefabricated proprietary partition systems shall be suitable for their purpose

Proprietary partitions should be specified in accordance with the manufacturer's recommendations.

DAMP-PROOF COURSES

6.3 - M8 Materials for damp-proofing shall adequately resist the passage of moisture

Materials which are acceptable for use as dpcs include:

- bitumen to BS 6398
- polyethylene to BS 6515
- proprietary materials assessed in accordance with Technical Requirement R3.

Dpcs should be not less than the width of the wall or partition.

SOUND INSULATION MATERIALS

6.3 - M9 Materials used for sound insulation shall be of a suitable thickness and density

Normally, mineral wool quilt should be used for acoustic insulation in partitions. The thickness and density should be as required by the design.

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FIRE-STOPPING MATERIALS

6.3 - M10 Fire-stopping materials shall be suitable to resist the passage of fire

Suitable fire-stopping materials include:

- mineral wool
- cement mortar
- gypsum plaster
- intumescent mastic or preformed strip
- proprietary sealing systems (particularly those designed for service penetrations) assessed in accordance with Technical Requirement R3 to maintain the fire resistance of the wall.

FIREPLACES AND FLUES

6.3 - M11 Fireplaces and flues

See Chapter 6.8 'Fireplaces, chimneys and flues'.

SITWORK STANDARDS

6.3 - S1 All sitework shall:

- meet the Technical Requirements
- take account of the design
- follow established good practice and workmanship

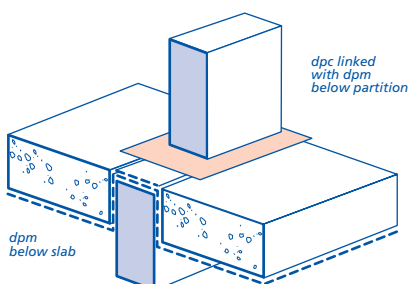
Sitework that follows the design and the guidance below will be acceptable for internal walls, including separating walls and compartment walls.

DAMP-PROOF COURSES

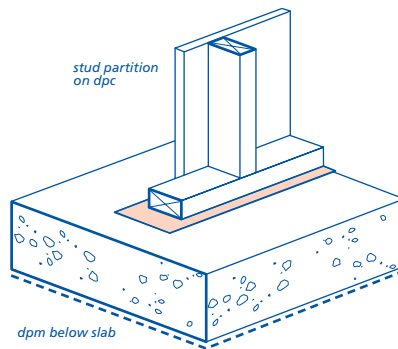
6.3 - S2 Damp-proof courses shall be installed to prevent moisture entering the building

A dpc should be provided below all loadbearing walls built off foundation walls. The dpc should be linked with any adjoining dpm.

The dpm may be either continuous or formed by two separate overlapping pieces.

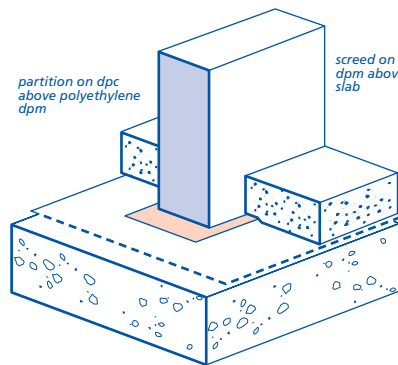


Dpcs should be provided below timber partitions where directly fixed to floor slabs, even if there is a dpm beneath the slab. This is to prevent residual moisture in the concrete affecting the timber.



A dpc should be provided below all internal walls where the dpm is applied to the top surface of the slab.

The dpcs should be at least the width of the partition. Where dpcs join, the lap should be at least 100mm.



MASONRY PARTITIONS

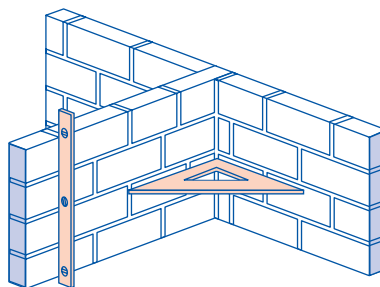
6.3 - S3 Construction of masonry internal walls shall ensure adequate stability

Items to be taken into account include:

- setting out and workmanship**
Partitions should be accurately set out in accordance with the design.

All work should be reasonably plane and true. Walls should be plumbed and courses levelled by using lines and spirit levels.

Openings should be formed to the correct size and shape. Templates should be used, where necessary.



(b) construction sequence

Walling should be constructed in lifts/stages to prevent distortion of wall panels during construction.

(c) mortar mix and joints

MIX

Make sure the correct mix is used. A mortar of 1 : 1 : 5½, cement : lime : sand, with plasticiser is suitable for both internal and external walls.

Unless otherwise specified, ordinary Portland cement may be used. Sulfate-resisting Portland cement should be used, where necessary (see Chapter 6.1 'External masonry walls' (Sitework)).

Mixers should be maintained and cleaned to function properly.

Mortar should be used within 2 hours, unless it is a retarded mortar. Mortar should not be re-tempered after setting has commenced.

RETARDED MORTAR

Retarded mortar should not be used beyond the time specified by the supplier.

Retarded mortar should not be used during cold weather.

ADDITIVES

Where plasticisers or other additives are to be used, the manufacturer's instructions should be followed. An air entraining agent can help reduce frost damage but it is not an anti-freeze. The recommended quantity of air entraining agent should be carefully measured for each batch in accordance with the manufacturer's instructions.

MORTAR JOINTS

All bricks and blocks should be laid on a full bed of mortar.

All perpend should be solidly filled.

If walls are to be finished with wet plaster, joints should be raked out square to a shallow depth to provide a key.

For dry lining, mortar joints should be struck off flush.

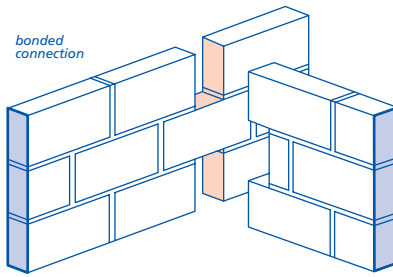
For information on dry lining masonry walls, reference should be made to Chapter 8.2 'Wall and ceiling finishes' (Sitework).

(d) bonding and tying

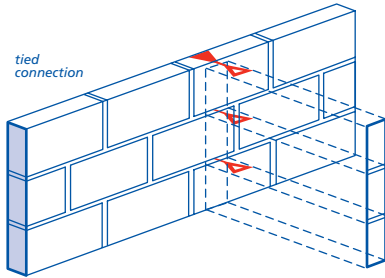
A regular bonding pattern should be maintained. All masonry walls and partitions should be fully bonded or tied, as required by the design.

Either:

- tooth every alternate course, or
- tie with expanded metal or equivalent, at centres not exceeding 300mm vertically.



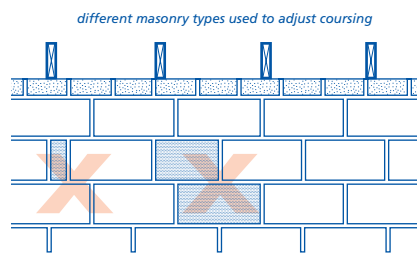
bonded connection



tied connection

Joist filling should be brick or blockwork, without excessive mortar joints. Bricks and blocks should not be mixed.

To avoid cracking, bricks and blocks or blocks of different types should not be mixed in the same wall.



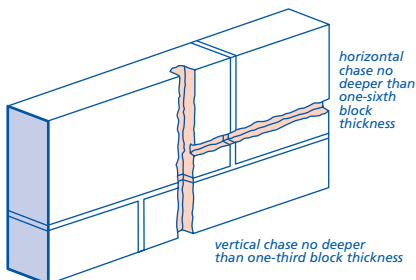
different masonry types used to adjust coursing

incorrect use of different masonry types

(e) chasing for services

Chases can reduce the sound insulation value of a wall and should be cut only where required by the design. Impact power tools that can damage the wall should not be used.

The depth of horizontal chases should not exceed one-sixth the thickness of the single leaf, and vertical chases, one-third the thickness. Hollow blocks should not be chased, unless specifically permitted by the manufacturer.



horizontal chase no deeper than one-sixth block thickness

vertical chase no deeper than one-third block thickness

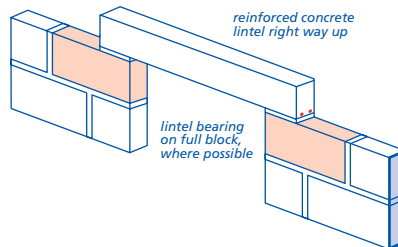
(f) size, location and support of lintels and beams

Lintels should be the correct size for the opening and have the correct bearing at each end:

Span [m]	Minimum bearing [mm]
Up to 1.2	100
Over 1.2	150

Long lintels may require padstones. Lintels should bear on a full block where possible and be installed level on a solid bed of mortar. Soft or non-durable packing should not be used.

Small pieces of cut bricks or blocks should not be used around lintel bearings. Concrete lintels should be the right way up.

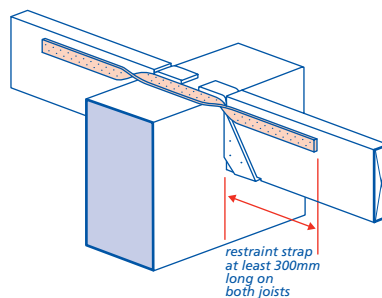


Where steel beams are to be used, reference should be made to Chapter 6.5 'Steelwork support to upper floors and partitions' (Sitework) for guidance on steel beam sizes and the need for padstones.

(g) restraint strapping

Joists built into masonry walls provide adequate lateral restraint.

Restraint straps may be required by the design. If so, they should be fitted before new masonry is built above.



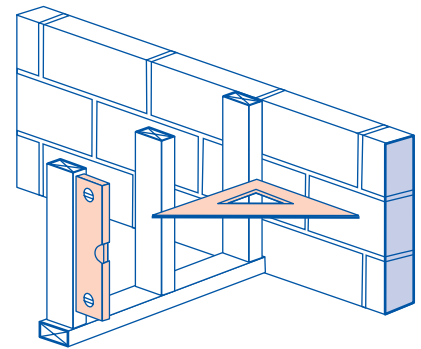
TIMBER STUD PARTITIONS

6.3 - S4 Construction of timber stud internal walls shall ensure adequate stability

Items to be taken into account include:

(a) setting out and workmanship

Partitioning should be correctly positioned, square and plumb.



Studs should be spaced at centres to suit the plasterboard thickness. Extra studs should be provided at openings, as required by the design.

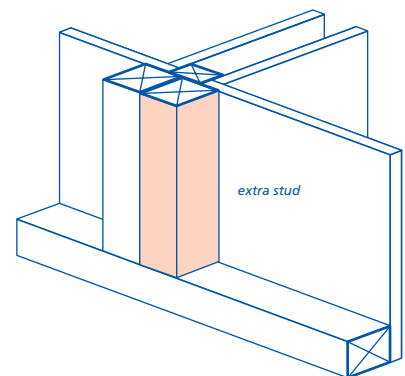
(b) size of timber members

Loadbearing timber partitions should be constructed in accordance with the design. Unless designed otherwise, the minimum specification for all partitions should be:

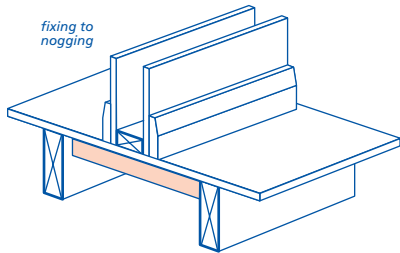
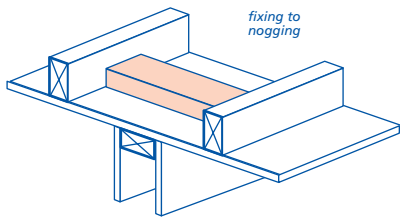
- sill and head plates 63mm x 38mm
- studs 63mm x 38mm at maximum 600mm centres
- framing joints secured with not less than 2 nails per joint
- blocking/nogging for support of plasterboard 43mm x 38mm
- blocking/nogging for other purposes 63mm x 38mm.

(c) support and fixings

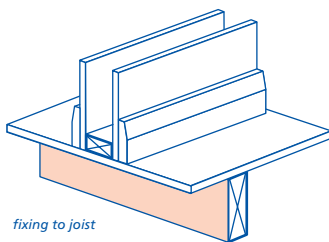
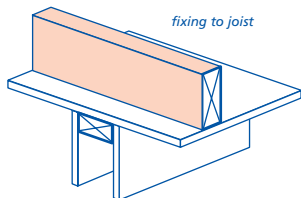
Partitions should be firmly fixed to each other and to abutting walls. Noggings or extra studs should be used, where necessary.



Partitions should be fixed at head and base to noggings or joists.



PARTITION PARALLEL TO JOIST

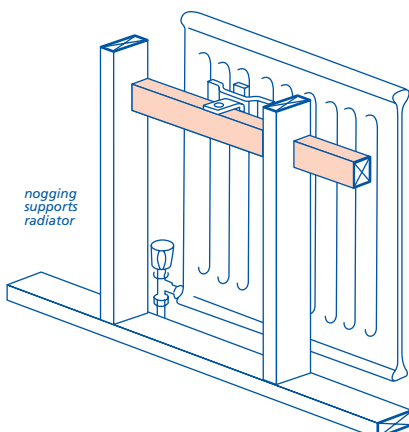


PARTITION AT RIGHT ANGLES TO JOIST

Internal partitions should not be wedged against ceiling joists or roof trusses. This does not allow for ceiling deflection/movement and can damage the ceiling boards.

Partitions should not be over-wedged at floor level. This could damage floor boarding.

Noggings should be provided to support fittings, such as radiators, wall mounted boilers, sanitary fittings, kitchen units, etc.



Fixing and finishing plasterboard partitions should be in accordance with Chapter 8.2 'Wall and ceiling finishes' (Sitework).

PROPRIETARY PARTITIONS

6.3 - S5 Proprietary partitions shall be erected in accordance with manufacturers' recommendations

Partitioning should be correctly positioned, square and plumb. The manufacturer's recommended construction sequence should be followed.

Timber or other additional fixings should be provided for radiators, electrical outlets, switches and the like.

SEPARATING WALLS

6.3 - S6 Construction of separating walls shall ensure adequate sound insulation

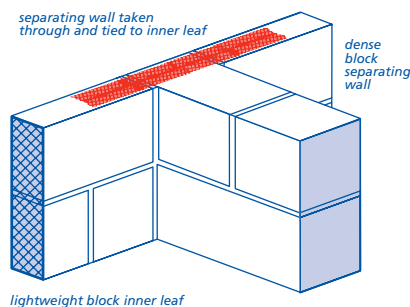
MASONRY SEPARATING WALLS

The correct density of block should be used. Holes, voids, even hairline cracks, can significantly reduce the effectiveness of a sound-insulating wall.

To maintain sound insulation:

- fully fill all mortar beds and perpend
- use only butterfly or other approved wall ties for cavities up to 75mm wide
- space wall ties 900mm minimum horizontally and 450mm minimum vertically
- stagger the positions of electrical socket outlets on opposite sides of separating walls
- tie in or tooth bond to adjoining walls to improve rigidity of separating wall
- where joist ends are built into separating walls fully fill the spaces around the joists with mortar and point around the joist perimeter with silicone sealant as required by the design
- chases for services should be well filled with mortar.

Solid separating walls should be taken through the inner leaf of a cavity external wall using metal ties to provide rigidity. However, if the same blocks are used for both walls, tooth bonding is acceptable.



TIMBER SEPARATING WALLS

The design details should be carefully followed. There should be no gaps in the:

- mineral wool quilt
- plasterboard layers
- fire-stopping.

Services should not penetrate the plasterboard layers. They should be fixed in front of the plasterboard.

PARTITIONS TO ROOMS CONTAINING A WC

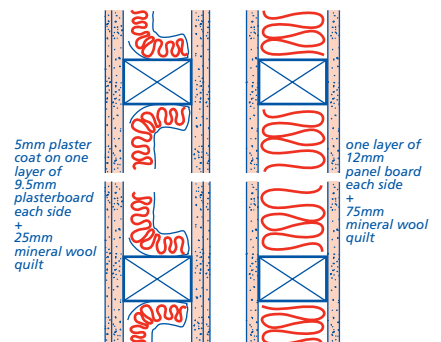
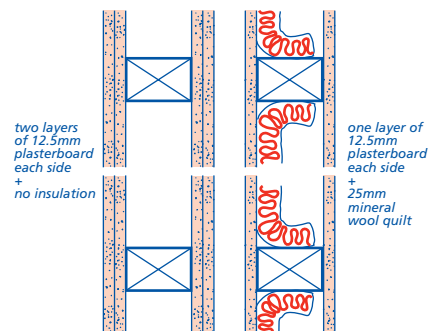
6.3 - S7 Partitions to rooms containing a WC shall provide adequate sound insulation, where required by the design

The guidance below applies in Scotland, Northern Ireland and the Isle of Man. In England and Wales the design should be checked to see how sound insulation is to be achieved.

A partition between a room containing a WC and a living room, dining room, study or bedroom (except where the WC is en-suite) should have adequate sound insulation.

Most masonry partitions provide adequate sound insulation without additional treatment.

Some methods of providing adequate sound insulation with a timber stud partition are shown below:



Where two layers of plasterboard are used, the joints should be staggered and the joints in the outer layer properly filled.

Proprietary plasterboard partitions usually need an additional layer of plasterboard to one or both sides of the partition to provide adequate sound insulation.

WALLS PROVIDING FIRE RESISTANCE

6.3 - S8 Internal walls shall, where required, have adequate resistance to fire spread

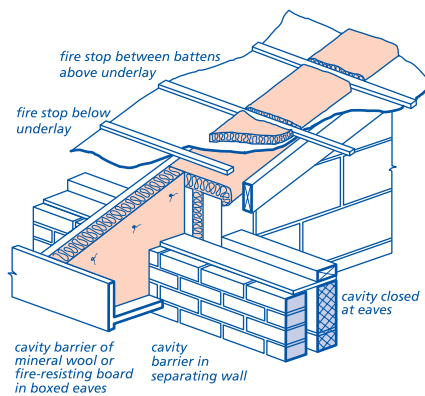
Items to be taken into account include:

(a) separating wall construction

Junctions between separating walls and roofs should be firestopped to the underside of the tiling to prevent fire spreading between dwellings.

The separating wall should stop about 25mm below the top of adjacent roof trusses.

Soft packing, such as mineral wool, should be used above and below the roofing underlay, to allow for movement in roof timbers and prevent 'hogging' of the tiles.



It is important that a cavity barrier is provided within boxed eaves. The cavity barrier should be wire reinforced mineral wool blanket, at least 50mm thick, nailed to the rafter and carefully cut to shape to fully seal the boxed eaves.

(b) penetration of fire-resisting walls by services

Pipes, cables and ducting should be firestopped where they pass through fire-resisting walls, including:

- separating walls
- compartment walls
- walls to ducts serving flats.

The design requirements for firestopping should be checked and making good completed neatly.

CHIMNEYS, FLUES AND LININGS

6.3 - S9 Construction of chimneys, flues and linings

See Chapter 6.8 'Fireplaces, chimneys and flues'.

6.3

Internal walls

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