

# Introduction

This Technical Booklet has been prepared by the Department of the Environment for Northern Ireland and provides for certain methods and standards of building which, if followed, will satisfy the requirements of the Building Regulations (Northern Ireland) 1994 (“the Building Regulations”).

There is no obligation to follow the methods or comply with the standards set out in this Technical Booklet.

If you prefer you may adopt another way of meeting the requirements of the Building Regulations but you will have to demonstrate that you have satisfied those requirements by other means.

## Other regulations

This Technical Booklet relates only to the requirements of regulation C4. The work will also have to comply with all other relevant Building Regulations.

## British Standards and European Technical Specifications

In this introduction and throughout this Technical Booklet any reference to a British Standard shall be construed as a reference to –

- (a) a British Standard or British Standard Code of Practice;
- (b) a harmonised standard or other relevant standard of a national standards body of any Member State of the European Economic Area;
- (c) an international standard recognised for use in any Member State of the European Economic Area;
- (d) any appropriate, traditional procedure of manufacture of a Member State of the European Economic Area which has a technical description sufficiently detailed to permit an assessment of the goods or materials for the use specified; or
- (e) a European Technical Approval issued in accordance with the Construction Products Directive,

provided that the proposed standard, code of practice, specification, technical description or European Technical Approval provides, in use, equivalent levels of safety, suitability and fitness for purpose as that provided by the British Standard.

## Products conforming with a European Council Directive

Any product designed and manufactured to comply with the requirements of a European Council Directive does not have to comply with any other standard or part of a standard, whether British, International or other, which relates to the same characteristic or specific purpose as the EC Directive.

## EC marked construction products

Any construction product (within the meaning of the Construction Products Directive) which bears an EC Mark shall be treated as if it satisfied the requirements of any appropriate British Board of Agrément Certificate, British Standard or British Standard Code of Practice relating to such a product, where the EC Mark relates to the same characteristic or specific purpose as the Certificate, Standard or Code of Practice.

## Testing of materials and construction

Where for the purposes of this Technical Booklet testing is carried out it shall be carried out by an appropriate organisation offering suitable and satisfactory evidence of technical and professional competence and independence. This condition shall be satisfied where the testing organisation is accredited in a Member State of the European Economic Area in accordance with the relevant parts of the EN 45000 series of standards for the tests carried out.

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## Materials and workmanship

Any work to which a requirement of the Building Regulations applies must, in accordance with Part B of the Building Regulations, be carried out with suitable materials and in a workmanlike manner. You can comply with the requirements of Part B by following an appropriate British Standard or you may demonstrate that you have complied with those requirements by other suitable means, such as an acceptable British Board of Agrément Certificate, Quality Assurance Scheme, Independent Certification Scheme or Accredited Laboratory Test Certificate.

## Diagrams

The diagrams in this Technical Booklet supplement the text. They do not show all the details of construction and are not intended to illustrate compliance with any other requirement of the Building Regulations. They are not necessarily to scale and should not be used as working details.

## References

Any reference in this Technical Booklet to a publication shall, unless otherwise stated, be construed as a reference to the edition quoted, together with any amendments, supplements or addenda thereto current at 28 February 1994.

## Appendix

Appendix 1 is not part of the regulations or deemed to satisfy provisions; it gives outline guidance on regulation C2(1)b (preparation of sites contaminated by dangerous or harmful substances).

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# Section 1 – Resistance to ground moisture

**1.1** In this Section floor and wall constructions are given for resistance to ground moisture. The floor constructions are the same as those given in Technical Booklet F: Conservation of fuel and power, however, in this Technical Booklet they are considered in terms of moisture resistance.

## **1.2 Conditions on the use of floor constructions**

These floor constructions are not suitable for use on sites where water may exert a hydrostatic pressure.

Any damp-proof membrane or damp-proof course must be compatible with any insulating material with which it is in contact.

## **1.3 Damp-proof membranes and damp-proof courses**

**(a)** Damp-proof membranes for floors shall consist of a continuous layer of –

- (i) hot applied soft bitumen or coal tar pitch, not less than 3 mm thick;
- (ii) bitumen solution, bitumen/rubber emulsion or tar/rubber emulsion, applied in not less than 3 coats; or
- (iii) at least 300µm (1200 gauge) polyethylene sheet or 250µm (1000 gauge) where in accordance with an appropriate BBA Certificate or to PIFA Standard.

**(b)** Damp-proof courses shall be –

- (i) bitumen to BS 6398: 1983;
- (ii) polyethylene to BS 6515: 1984; or
- (iii) in the case of any other material, to BS 743: 1970.

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## 1.4 Ground preparation for floors next to ground

Prepare the ground to an even surface.

Lay a hardcore bed 100 mm thick of stone, clean broken brick or similar inert material free from fine material and water soluble sulphates in quantities which would damage the concrete; consolidated and blinded to form an even surface.

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## 1.5 Construction of floors next to ground

### Ground supported concrete

#### (a) Ground preparation as paragraph 1.4.

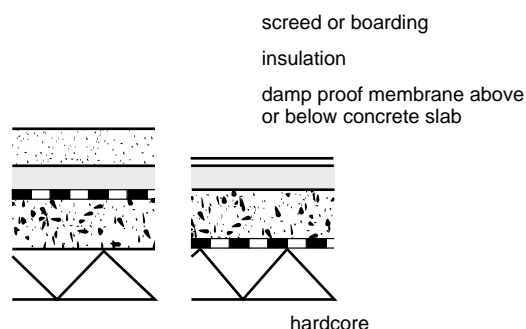
The fine blinding material shall not damage any damp-proof membrane.

Concrete slab at least 100 mm thick with a damp-proof membrane laid either above or below the slab.

Damp-proof membrane sealed to the damp-proof course in walls, columns and other abutting elements in accordance with the relevant clauses in Section 3 of CP 102: 1973.

Insulation, if any, applied as a rigid material under a screed or boarding.

Floor finish optional.



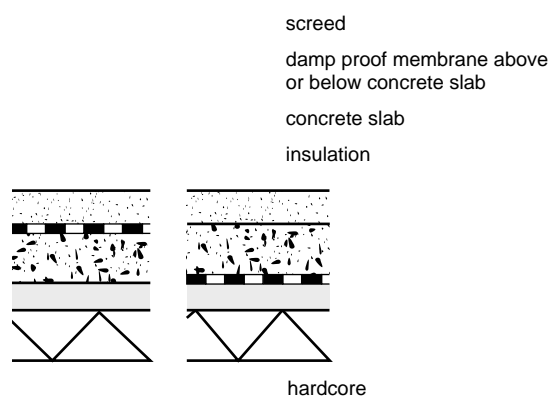
#### (b) Ground preparation as paragraph 1.4.

Insulation, if any, applied as a rigid material on the fine blinding material. The insulating material shall be extruded polystyrene or cellular glass.

Concrete slab at least 100 mm thick with a damp-proof membrane laid as a sandwich between the concrete slab and a screed, or between the insulation and the concrete slab.

Damp-proof membrane sealed to the damp-proof course in walls, columns and other abutting elements in accordance with the relevant clauses in Section 3 of CP 102: 1973.

Floor finish optional.



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## Suspended concrete floors

(c) Prepare the ground to an even surface.

The top surface of the ground under the building shall be above the finished level of the adjoining ground.

Suspended concrete floor of cast in-situ or precast concrete slabs or beams with concrete or clay infill units.

Insulation, if any, applied as a rigid material under a screed or boarding.

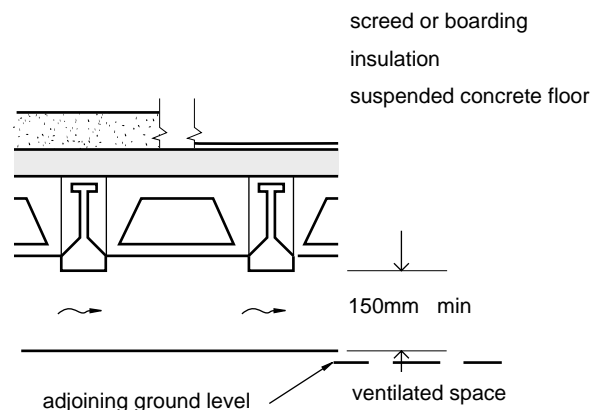
Floor finish optional.

Permanent cross ventilation of the underfloor space direct to outside air by ventilators in at least 2 opposite external walls of the building.

Ventilation openings having an opening area of 1500 mm<sup>2</sup> per metre run of perimeter wall or 500 mm<sup>2</sup> per square metre of floor area, whichever gives the greater opening area. The ventilation openings shall be spaced to ensure that all underfloor areas are ventilated. All sleeper walls or similar underfloor obstructions shall be of honeycombed construction or have similar provision for distribution of ventilation.

The underfloor space shall be free from debris.

The underside of the floor slab or beams not less than 150 mm above the top of the ground.



## Suspended timber floors

(d) Either –

(i) ground preparation as paragraph 1.4 with a ground cover of concrete at least 100 mm thick; or

(ii) prepare the ground to an even surface and lay a ground cover of concrete at least 50 mm thick, on a damp-proof membrane of at least 300 $\mu$ m (1200 gauge) polyethylene or equivalent, laid on a bed of fine blinding material which will not damage the damp-proof membrane.

The top surface of the ground cover under the building shall be above the finished level of the adjoining ground.

Suspended floor of timber joists and boarding.

Insulation, if any, applied between the joists and suitably supported.

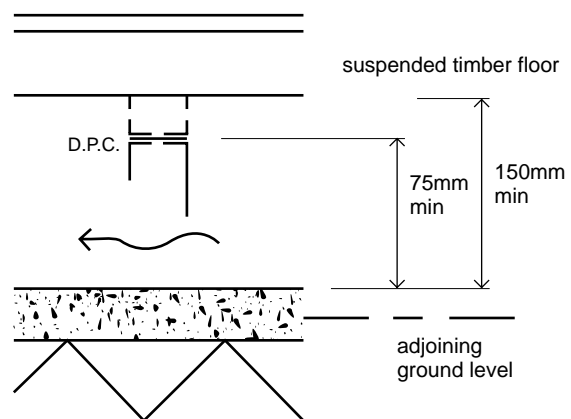
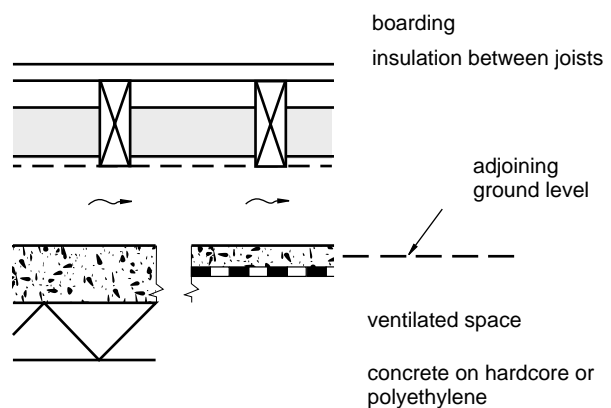
Floor finish optional.

Permanent cross ventilation of the underfloor space direct to outside air by ventilators in at least 2 opposite external walls of the building. Ventilation openings having an opening area of 1500 mm<sup>2</sup> per metre run of perimeter wall or 500 mm<sup>2</sup> per square metre of floor area whichever gives the greater opening area. The ventilation openings shall be spaced to ensure that all underfloor areas are ventilated. All sleeper walls or similar underfloor obstructions shall be of honeycombed construction or have similar provision for distribution of ventilation.

The underfloor space shall be free from debris.

The underside of the floor joists not less than 150 mm above the top of the ground cover.

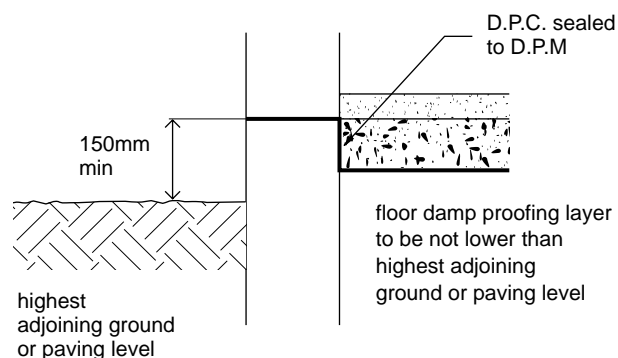
The underside of any wall plate not less than 75 mm above the top of the ground cover.



## 1.6 Protection of walls against ground moisture

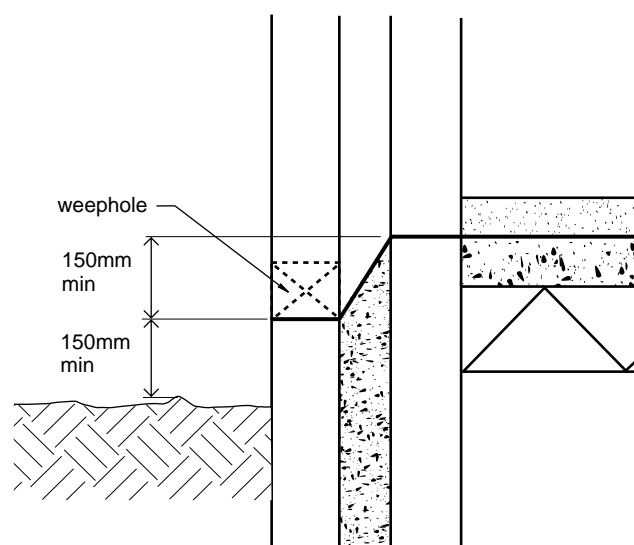
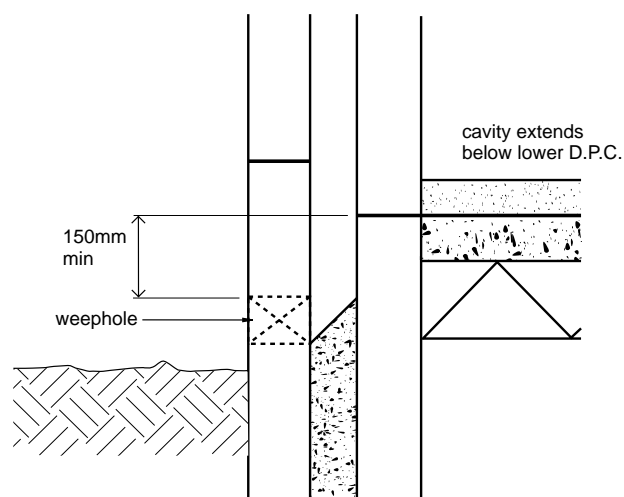
(a) Any wall, pier, column or chimney shall have –

- (i) a damp-proof course, which shall be sealed to any floor damp-proof membrane;
- (ii) such additional barriers to moisture as necessary to protect any material which would be damaged by moisture and to ensure that moisture is not transmitted to the inside of the building; and
- (iii) where they form part of an external wall, the damp-proof course at a height not less than 150 mm above the finished level of the adjoining ground (see top diagram).



(b) In any external masonry cavity wall –

- (i) the cavity shall extend not less than 150 mm below the level of the lower damp-proof course (see middle diagram); or
- (ii) the damp-proof course shall be provided in the form of a continuous stepped cavity tray, drained to outside (see bottom diagram).



## Section 2 – Resistance to weather

**2.1** In this Section wall and roof constructions are given for resistance to weather. The constructions are the same as those given in Technical Booklet F: Conservation of fuel and power, however, in this Technical Booklet they are considered in terms of moisture resistance.

With some combinations of materials the constructions described in paragraphs 2.4(a) and (b), and 2.5(a) may be subject to interstitial condensation. In dwellings, regulation C7 requires measures to prevent the harmful effect of interstitial condensation and BS 5250 “Control of condensation in buildings” is given as the deemed-to-satisfy provision.

Buildings other than dwellings may also need measures to prevent harmful interstitial condensation. Where this is the case, a vapour control layer of at least 125µm polyethylene should be provided on the warm side of the insulation. The location of the vapour control layer is given in the text describing the construction.

### **2.2 Conditions on the use of masonry walls**

**(a)** The construction shall be suitable for the degree of exposure to which it will be subjected when assessed in accordance with BS 8104: 1992 in conjunction with Clause 21 of BS 5628: Part 3: 1985.

**(b)** Masonry walls of bricks or blocks shall incorporate damp-proof courses, flashings and other moisture resistant features in accordance with the relevant recommendations of BS 5628: Part 3: 1985 and BS 8215: 1991.

Masonry walls of stone or cast stone shall incorporate damp-proof courses, flashings and other moisture resistant features in accordance with the relevant recommendations of BS 5390: 1976 (1984).

**(c)** Where external rendering is to be used, it shall comply with the relevant recommendations of BS 5262: 1976.

**(d)** Where insulation is to be built-in –

(i) as a full cavity fill, it shall be man-made mineral fibre batts (slabs) manufactured in accordance with BS 6676: Part 1: 1986 and installed in accordance with BS 6676: Part 2: 1986;

(ii) as a partial cavity fill, it shall be manufactured and installed in compliance with a valid British Board of Agrément Certificate.

**(e)** Where insulation is to be blown into the wall cavity after construction, the suitability of the wall for filling shall be assessed in accordance with BS 8208: Part 1: 1985 before the work is carried out and where the insulation is –

(i) in-situ foamed urea formaldehyde, it shall be manufactured in accordance with BS 5617: 1985 and be prepared and installed in accordance with BS 5618: 1985;

(ii) man-made mineral fibre, it shall perform as specified in BS 6232: Part 1: 1982 and be installed in accordance with BS 6232: Part 2: 1982; or

(iii) bonded polystyrene beads, it shall be in compliance with a valid British Board of Agrément Certificate.

**(f)** Where insulation is to be externally applied to masonry and protected by a rendered coating, the system shall be in compliance with a valid British Board of Agrément Certificate.



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## 2.3 Conditions on the use of wall cladding and roof coverings

- (a) Non-loadbearing walls shall be designed and constructed in accordance with BS 8200: 1985.
- (b) Flat roofs shall be designed and constructed in accordance with BS 6229: 1982.
- (c) Every wall or roof construction shall incorporate damp-proof courses, flashings, cavity trays, drips, laps, sealed joints and other moisture resistant features as necessary to exclude moisture from the building.
- (d) Where a wall or roof incorporates any of the claddings or coverings listed in Table 1, it shall be designed and constructed in accordance with the relevant British Standard or British Standard Code of Practice listed in that Table.
- (e) Where a high performance roofing felt is to be used as a weatherproof roof covering, it shall be in compliance with a valid BBA Certificate.

**Table 1 – Cladding or covering material**

Materials	Element	British Standards and Codes of Practice
Aluminium	wall or roof	CP143: Part 1: 1958 and Part 15: 1973 (1986)
Galvanised corrugated steel	wall or roof	CP143: Part 10: 1973
Lead	wall or roof	BS 6915: 1988
Copper	wall or roof	CP143: Part 12: 1970 (1988)
Slates and tiles	wall or roof	BS 5534: Part 1: 1990
Zinc	wall or roof	CP143: Part 5: 1964
Precast concrete	wall	CP297: 1972
Natural stone	wall	BS 8298: 1989
Bitumen felt	roof	CP144: Part 3: 1970
Mastic asphalt	roof	CP144: Part 4: 1970

## 2.4 Solid masonry walls

### Basic construction

Solid wall at least 200 mm thick of bricks or blocks of clay, calcium silicate, concrete or cast stone.

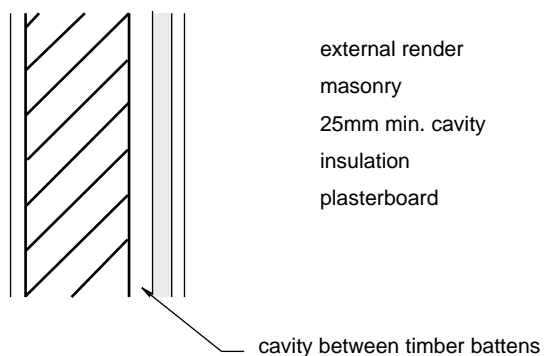
#### (a) Basic construction as above.

Where the exposure category is worse than moderate/severe the wall thickness shall be increased in accordance with Table 11 of Section 3 of BS 5628: Part 3: 1985.

External rendering to BS 5262: 1976.

Provide an airspace of at least 25 mm between the outside face of the internal lining and the inside face of the masonry.

Where a vapour control layer is provided it shall be fixed between the insulation and plasterboard.

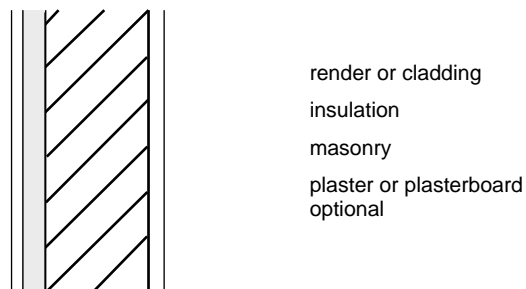


#### (b) Basic construction as above.

External rendering or a cladding of sheets, tiles or boarding.

Where a cladding is used provide a ventilated airspace immediately behind the cladding.

Where a vapour control layer is provided it shall be fixed between the internal surface of the masonry and a plasterboard lining.



## 2.5 Cavity masonry walls

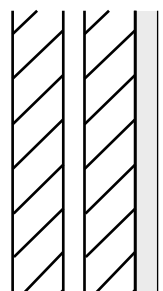
### Basic construction

Cavity wall of 2 leaves of masonry separated by a cavity at least 50 mm wide; each leaf at least 100 mm thick of bricks or blocks of clay, calcium silicate, concrete or cast stone. External render optional.

#### (a) Basic construction as above.

Insulation applied as a lining to the internal surface of the wall with a plasterboard internal lining.

Where a vapour control layer is provided it shall be fixed between the insulation and plasterboard.

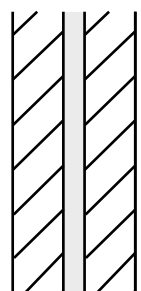


masonry  
50mm min cavity  
masonry  
insulation  
plasterboard

#### (b) Basic construction as above.

Insulation applied as a cavity fill.

Internal finish of plaster or plasterboard optional.

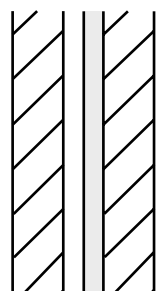


masonry  
50mm min separation  
between masonry leaves  
insulation  
masonry  
plaster or plasterboard  
optional

#### (c) Basic construction as above.

Insulation, if any, applied as a partial cavity fill so as to preserve a residual airspace of at least 50 mm wide.

Internal finish of plaster or plasterboard optional.



masonry  
50mm min cavity  
insulation  
masonry  
plaster or plasterboard  
optional

## 2.6 Framed walls

**(a)** Framed wall of timber studs and noggings with a vapour permeable sheathing material over the framing and covered with a breather membrane having a vapour resistance of not more than 0.6 MNs/g.

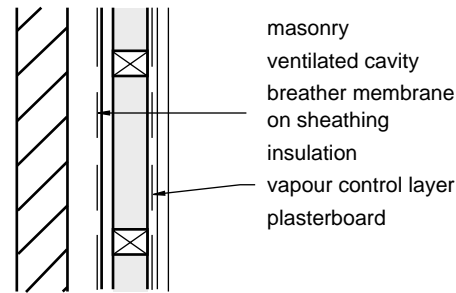
Masonry external leaf at least 100 mm thick of bricks or blocks of clay, calcium silicate, concrete or cast stone, with a ventilated cavity between the cladding and sheathing material. The cavity shall be uniform in width and shall be not less than 50 mm wide and not greater than 100 mm wide.

The cavity shall be ventilated by means of open perpend joints at the top and bottom of the wall. There shall be at least one open perpend joint for every 1.2 m length of wall.

External render optional.

Glass or rock fibre insulation applied as an infill to the framing.

Internal finish of plasterboard on a vapour control layer of at least 125 $\mu$ m (500 gauge) polyethylene.

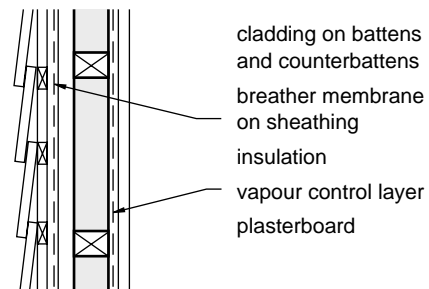


**(b)** Framed wall of timber studs and noggings with a vapour permeable sheathing material over the framing and covered with a breather membrane having a vapour resistance of not more than 0.6 MNs/g.

Cladding of weatherboarding, tiles or slates on battens and counterbattens.

Glass or rock fibre insulation applied as an infill to the framing.

Internal finish of plasterboard on a vapour control layer of at least 125 $\mu$ m (500 gauge) polyethylene.

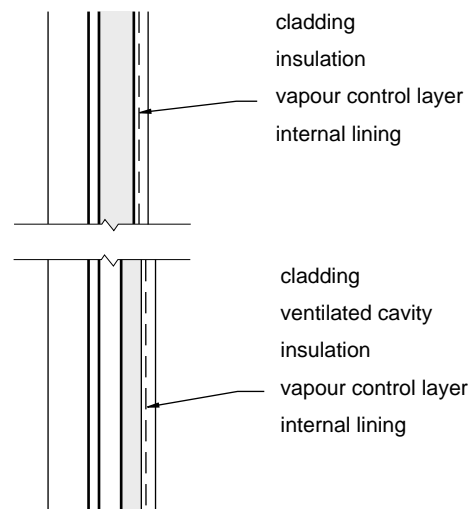


**(c)** Framed wall of timber studs and noggings or of metal studs and rails.

Cladding of fibre cement, GRC, GRP, plastics or metal.

Insulation, if any, applied either to the internal face of the framing with a permanently ventilated cavity directly behind the cladding or, where the cladding system is vapour permeable, as an infill to the framing.

An internal lining on a vapour control layer of at least 125 $\mu$ m (500 gauge) polyethylene.



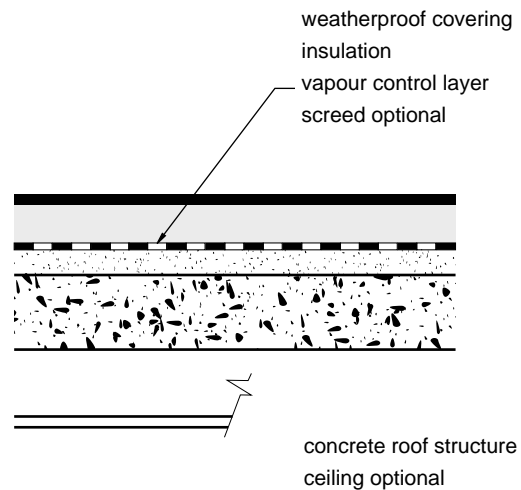
## 2.7 Flat roofs

**(a)** Flat roof structure of in-situ or precast concrete with or without a screed.

External weatherproof covering, with insulation below laid on a vapour control layer over the roof structure.

The vapour control layer shall be high performance roofing felt to BS 747 laid in hot bitumen with sealed laps.

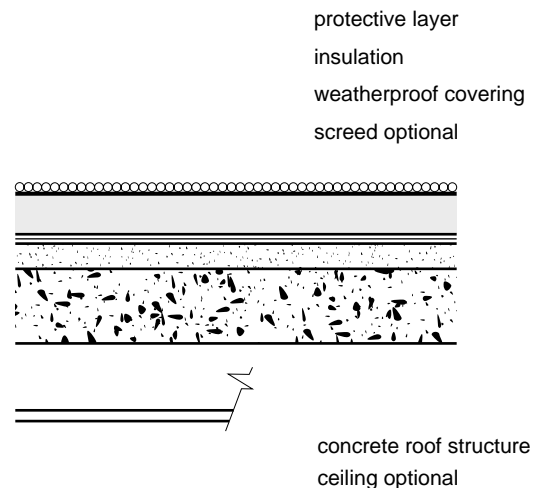
Suspended ceiling optional.



**(b)** Flat roof structure of in-situ or precast concrete with or without a screed.

Protective topping or ballast layer on insulation with a low water absorption (eg. extruded polystyrene) laid on a weatherproof covering over the roof structure.

Suspended ceiling optional.

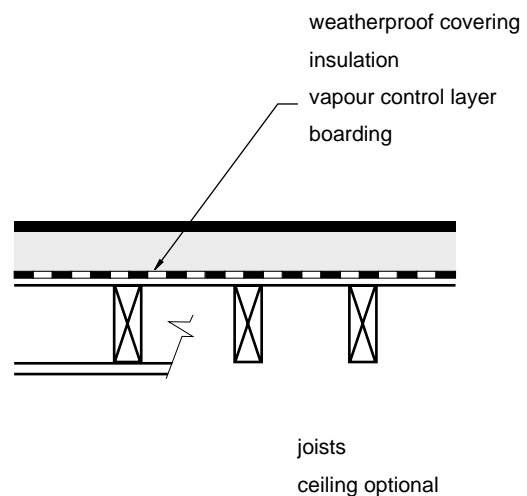


**(c)** Flat roof structure of timber or metal framed construction overlaid with a board decking at least 19 mm thick.

External weatherproof covering, with insulation below laid on a vapour control layer over the board decking.

The vapour control layer shall be high performance roofing felt to BS 747 laid in hot bitumen with sealed laps.

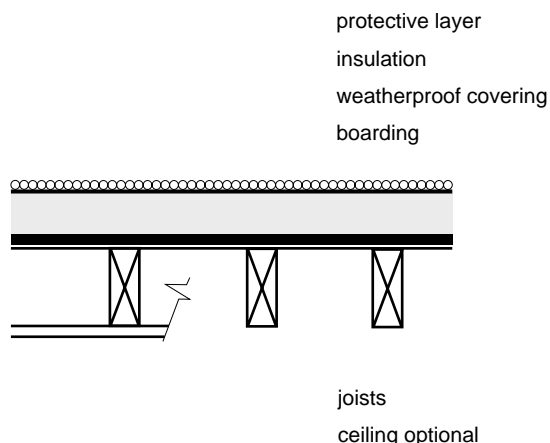
Ceiling optional.



**(d)** Flat roof structure of timber or metal framed construction overlaid with a board decking at least 19 mm thick.

Protective topping on insulation with a low water absorption (eg. extruded polystyrene) laid on a weatherproof covering over the roof structure.

Ceiling optional.

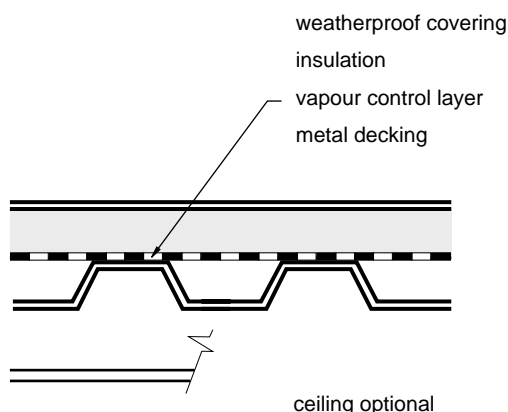


**(e)** Flat roof structure of timber or metal framed construction with a profiled metal decking.

External weatherproof covering, with insulation below laid on a vapour control layer over the metal decking.

The vapour control layer shall be high performance roofing felt to BS 747 laid in hot bitumen with sealed laps.

Suspended ceiling optional.

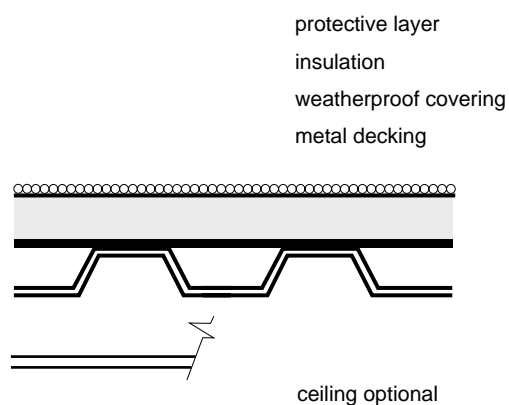


**(f)** Flat roof structure of timber or metal framed construction overlaid with a profiled metal decking.

Protective topping on insulation with a low water absorption (eg. extruded polystyrene) laid on a weatherproof covering over the roof structure.

Where the profiled metal decking does not have a continuous flat upper surface it shall be overlaid with 9 mm thick plywood.

Suspended ceiling optional.



Note – These flat roof provisions do not apply to sheet metal weatherproof coverings such as lead, copper, zinc, etc. which require joints to allow for thermal movement.

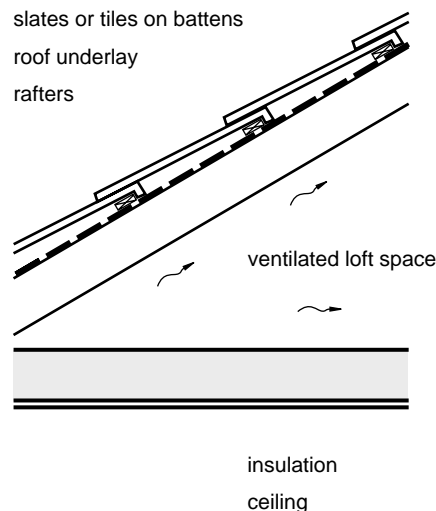
## 2.8 Pitched roofs

**(a)** Pitched roof structure of timber or metal framed construction.

External weatherproof covering of slates or tiles on battens on roof underlay.

Insulation applied over a horizontal ceiling.

Permanent ventilation shall be provided to the loft space in accordance with Clause 9.4.7.1 of BS 5250: 1989.



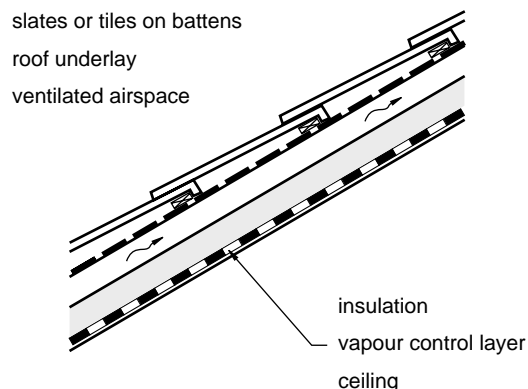
**(b)** Pitched roof structure of timber or metal framed construction.

External weatherproof covering of slates or tiles on battens on roof underlay.

Insulation applied over a sloping ceiling with a vapour control layer between the insulation and the ceiling.

The vapour control layer shall be at least 125 $\mu$ m (500 gauge) polyethylene with sealed laps.

Permanent ventilation shall be provided to the airspace in accordance with Clause 9.4.7.2 of BS 5250: 1989.

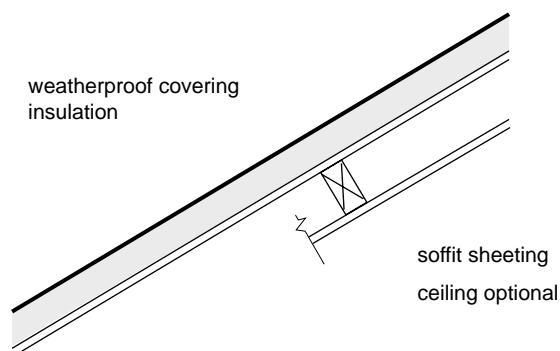


**(c)** Pitched roof structure of timber or metal framed construction.

External weatherproof covering of metal or fibre cement sheeting.

Insulation factory applied as an interlayer between the external and soffit sheeting to form a composite construction. All panel joints shall be sealed.

Sloping ceiling optional.



Note – These pitched roof provisions do not apply to sheet metal weatherproof coverings such as lead, copper, zinc, etc. which require joints to allow for thermal movement.







# Appendix 1

## **GUIDANCE ON THE PREPARATION OF CONTAMINATED SITES (REGULATION C2(1)(b))**

**A1 THIS APPENDIX IS NOT PART OF THE REGULATIONS OR THE DEEMED – TO – SATISFY PROVISION: IT GIVES OUTLINE GUIDANCE RELATING TO REGULATION C2(1)(b) ON THE PREPARATION OF SITES, WHERE DANGEROUS OR HARMFUL SUBSTANCES ARE SUSPECTED OR IDENTIFIED.**

### **A2 Definitions**

DANGEROUS AND HARMFUL SUBSTANCES include any substance which is or could become corrosive, explosive, inflammable, radioactive or toxic and includes deposits of faecal or animal matter.

In Table 2 –

REMOVAL means that the contaminant and any contaminated ground to be covered by the building should be taken out to a depth of 1 m (or less if the District Council agrees) below the level of the lowest floor and taken away to a place to be agreed with the District Council.

FILLING means that the ground to be covered by the building is to be covered to a depth of 1 m (or less if the District Council agrees) with a material which will not react adversely with or transmit any contaminant remaining and will be suitable for making up levels. (The type of filling and the design of the ground floor should be considered together).

INERT FILLING means that the filling is wholly non-combustible and not easily changed by chemical reactions.

SEALING means that a suitable impermeable barrier is laid between the contaminant and the building and sealed at the joints, around the edges and at the service entries. (Note that polyethylene may not be suitable if the contaminant is a liquid such as a tarry waste or organic solvent).

**A3** Site contamination can be naturally occurring such as the release of radon gas, or man-made such as the site being formerly used for a chemical or industrial process. Guidance on how to respond to site contamination is contained in this Appendix and in the Publications referred to.

### **A4 Naturally occurring contamination**

A radon affected area has been declared in the south of Counties Down and Armagh. Where a dwelling in this area is exposed to radon gas that dwelling must incorporate protective measures [Regulation C2(2)]. Guidance on such measures is given in the following publications –

- (i) DOE(NI) The householder's guide to Radon, and
- (ii) BRE. Radon: guidance on protective measures for new dwellings.

BRE also publish guidance on surveying existing dwellings and on remedial measures.

### **A5 Man-made contamination**

Man-made contamination, or the potential for it is a material planning consideration. Where local knowledge of previous use identifies land which may be contaminated by dangerous or harmful substances, and where planning permission is granted for a subsequent development, it may be granted subject to conditions or with informatives designed to minimise risk associated with the suspected contaminants to future users or occupiers of the site. The responsibility for assessing whether or not land is suitable for a particular purpose, including whether it is contaminated, rests primarily with the developer. (Some examples of contaminated sites are given in Table 1).

**Table 1 Examples of sites likely to contain contaminants**

Asbestos works  
Chemical works  
Gas works, coal carbonisation plants and ancillary by-product works  
Industries making or using wood preservatives  
Landfill and other waste disposal sites  
Metal mines, smelters, foundries, steel works and metal finishing works  
Munitions production and testing sites  
Nuclear installations  
Oil storage and distribution sites  
Paper and printing works  
Railway land, especially the larger sidings and depots  
Scrap yards  
Sewage works, sewage farms and sludge disposal sites  
Tanneries

**A6** There may be occasions when a site containing dangerous or harmful substances has not been identified at the planning stage, and the presence of contaminants is only suspected later. Some signs indicating the possible presence of contaminants are given in Table 2.

**A7** If any signs of possible contaminants are present the District Council should be told at once. If the presence of any of the contaminants listed in Table 2 is confirmed, it is likely that some form of remedial action will be required. For guidance, the normal course of remedial action is listed against each contaminant noted in Table 2. In all cases these courses of action assume that the ground to be covered by the building will have at least 100 mm of in-situ concrete laid over it.

**A8** Expert advice may be required to provide an economical and safe solution to the hazards encountered, especially where contaminants are present in large amounts or where there is danger to health or safety.

**A9** With the increasing re-development of former industrial land attention is also drawn to the British Standards Institution publication, first issued in April 1988 as a Draft for Development, DD175: 1988 (1992), "Code of practice for the identification of potentially contaminated land and its investigation". This is designed to provide guidance on the identification and investigation of sites where contaminants may exist and where hazards from undesirable substances may occur.

**A10** The subject is still relatively new and continues to develop, hence the publication of DD175 as a Draft for Development which is intended to compliment both BS 5930: 1981, Code of practice for site investigations and the guidance notes issued by the Department of the Environment for England and Wales – "Interdepartmental Committee on the Redevelopment of Contaminated Land".

Gaseous and liquid contaminants are mobile and a site can be affected by nearby sources.

Guidance on dealing with methane from land fill sites is given in BRE publication – BRE Construction of new buildings on gas contaminated land. BRE Report ISBN 0 85125 513 2.

**Table 2 – Possible contaminants and actions**

Signs of possible contamination	Possible contaminant	Remedial action
Vegetation (absence, poor or unnatural growth)	Metals Metal compounds + Organic compounds Gases	None
		Removal
Surface materials (unusual colours and contours may indicate wastes and residues)	Metals Metal compounds + Asbestos (loose) Other mineral fibres	None
	Organic compounds including phenols	Filling or sealing
	Combustible material including coal and coke dust	None
	Refuse and waste	Removal or filling
	Oily and tarry wastes	Remove or filling
		Total removal
		Removal, filling or sealing
Fumes and odours <sup>x</sup> (may indicate organic chemicals at very low concentrations)	Flammable, explosive, toxic and asphyxiating gases including methane and carbon dioxide	Removal*
	Corrosive liquids	Removal, filling or sealing
	Faecal, animal and vegetable matter (biologically active)	Removal or filling
Drums and containers (whether full or empty)	Various	Removal with all contaminated ground

+Special cement may be needed with sulphates.

xThe building should be designed and constructed so that all voids are ventilated.

\*The District Council may require the work to be done by a Specialist.

## Appendix 2 – Publications referred to

BS 743: 1970 Specification for materials for damp-proof courses

AMD 2503 March 1978

AMD 4336 September 1983

AMD 4594 October 1984

AMD 6579 January 1991

BS 747: 1977 (1986) Specification for roofing felts

AMD 3775 November 1981

AMD 4609 February 1985

AMD 5101 February 1986

BS 5250: 1989 Code of practice for control of condensation in buildings

BS 5262: 1991 Code of practice for external renderings

BS 5390: 1976 (1984) Code of practice for stone masonry

AMD 4272 June 1983

BS 5534: Code of practice for slating and tiling

Part 1: 1990 Design

BS 5617: 1985 Specification for urea-formaldehyde (UF) foam systems suitable for thermal insulation of cavity walls with masonry or concrete inner and outer leaves

BS 5618: 1985 Code of practice for thermal insulation of cavity walls (with masonry or concrete inner and outer leaves) by filling with urea-formaldehyde (UF) foam systems

AMD 6262 March 1990

AMD 7114 May 1992

BS 5628: Code of practice for use of masonry

Part 3: 1985 Materials and components, design and workmanship

AMD 4974 November 1985

BS 5930: 1981 Code of practice for site investigations

BS 6229: 1982 Code of practice for flat roofs with continuously supported coverings

BS 6232: Thermal insulation of cavity walls by filling with blown man-made mineral fibre

Part 1: 1982 Specification for the performance of installation systems  
AMD 5428 November 1990

Part 2: 1982 Code of practice for installation of blown man-made mineral fibre in cavity walls with masonry and/or concrete leaves

BS 6398: 1983 Specification for bitumen damp-proof courses for masonry

BS 6515: 1984 Specification for polyethylene damp-proof courses for masonry  
AMD 5444 October 1986

BS 6676: Thermal insulation of cavity walls using man-made mineral fibre batts (slabs)

Part 1: 1986 Specification for man-made mineral fibre batts (slabs)

Part 2: 1986 Code of practice for installation of batts (slabs) filling the cavity

BS 6915: 1988 Specification for design and construction of fully supported lead sheet roof and wall coverings

BS 8104: 1992 Code of practice for assessing exposure of walls to wind-driven rain

BS 8200: 1985 Code of practice for design of non-loadbearing external vertical enclosures of buildings

BS 8208: Guide to assessment of suitability of external cavity walls for filling with thermal insulants

Part 1: 1985 Existing traditional cavity construction

AMD 4996 September 1985

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BS 8215: 1991 Code of practice for design and installation of damp-proof courses in masonry construction

BS 8298: 1989 Code of practice for design and installation of natural stone cladding and lining

CP 102: 1973 Code of practice for protection of buildings against water from the ground

AMD 1511 July 1974

AMD 2196 January 1977

AMD 2470 February 1978

CP 143: Code of practice for sheet roof and wall coverings

Part 1: 1958 Aluminium, corrugated and troughed

PD 4346 October 1961

Part 5: 1964 Zinc

Part 10: 1973 Galvanised corrugated steel. Metric units

Part 12: 1970 (1988) Copper.

Metric units

AMD 863 February 1972

AMD 5193 January 1987

Part 15: 1973 (1986) Aluminium.

Metric units

AMD 4473 March 1984

CP 144: Roof coverings

Part 3: 1970 Built-up bitumen felt.

Metric units

AMD 2527 April 1978

AMD 5229 June 1986

Part 4: 1970 Mastic asphalt.

Metric Units

AMD 6161 December 1990

CP 297: 1972 Precast concrete cladding (non-loadbearing)

DD 175: 1988 (1992) Code of practice for the identification of potentially contaminated land and its investigation

BRE: Construction of new buildings on gas contaminated land

BRE: Radon: guidance on protective measures for new dwellings

DOE: Interdepartmental committee on the redevelopment of contaminated land – Guidance Notes

DOE(NI) The householder's guide to radon