# Building Regulations, 1991

## TECHNICAL GUIDANCE DOCUMENT C
## SITE PREPARATION AND RESISTANCE TO MOISTURE


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# Contents

# BUILDING REGULATIONS, 1991

# TECHNICAL GUIDANCE DOCUMENT C SITE PREPARATION AND RESISTANCE TO MOISTURE

## INTRODUCTION

This document has been published by the Minister for the Environment under article 5 of the Building Regulations, 1991, for the purpose of providing guidance with regard to compliance with the requirements of Part C of the First Schedule to the Regulations. Where works are carried out in accordance with this guidance, this will, prima facie, indicate compliance with these requirements.

This document should be read in conjunction with the Regulations.

Guidance contained in this document with respect to the use of a particular material, method of construction, standard or other specification does not preclude the use of any other suitable material, method of construction, standard or specification.

## TECHNICAL SPECIFICATIONS

Building Regulations are made for specific purposes i.e. health, safety and welfare of persons, energy conservation and the special needs of disabled people. Technical Specifications (including Harmonised European Standards, European Technical Approvals, National Standards and Agrément Certificates) are relevant to the extent that they relate to these considerations. Technical Specifications may also address other aspects of performance not covered by the Regulations.

The references in this document to named Technical Specifications, or to materials and methods which are likely to be suitable for the purposes of the Regulations, are not exclusive and other materials and methods may be suitable in particular circumstances. A reference to a Technical Specification is to the latest edition (including any amendments, supplements or addenda) current at the date of publication of this Technical Guidance Document.

## MATERIALS AND WORKMANSHIP

Under Part D of the First Schedule to the Regulations, building work must be carried out with proper materials and in a workmanlike manner. Relevant guidance is contained in Technical Guidance Document D.

Part D of the First Schedule to the Regulations defines "proper materials" as materials which are fit for the use for which they are intended and for the conditions in which they are to be used, and includes materials which:

(a) bear a CE Mark in accordance with the provisions of the Construction Products Directive (89/106/EEC); or

(b) comply with an appropriate harmonized standard, European technical approval or national technical specification as defined in article 4(2) of the Construction Products Directive (89/106/EEC); or

(c) comply with an appropriate Irish Standard or Irish Agrément Board Certificate or with an alternative national technical specification of any Member State of the European Community, which provides in use an equivalent level of safety and suitability.

# SITE PREPARATION AND RESISTANCE TO MOISTURE

## Building Regulations - The Requirement

Part C of the First Schedule to the Building Regulations, 1991 provides as follows:

| | | |
|---|---|---|
| **Preparation of site.** | C1 | The ground to be covered by a building shall be reasonably free from vegetable matter. |
| **Subsoil drainage.** | C2 | Subsoil drainage shall be provided if necessary so as to prevent the passage of ground moisture to the interior of the building or damage to the fabric of the building. |
| **Dangerous substances.** | C3 | Precautions shall be taken to avoid danger to health and safety caused by substances (including contaminants) found on or in the ground to be covered by a building. |
| **Resistance to weather and ground moisture.** | C4 | The floors, walls and roof of a building shall be so designed and constructed as to prevent the passage of moisture to the inside of the building or damage to the fabric of the building. |
| **Definitions for this Part.** | C5 | In this Part -<br>"contaminant" includes any substance which is or could become flammable, explosive, corrosive, toxic or radioactive and any deposits of faecal or animal matter;<br><br>"floor" includes any base or structure between the surface of the ground or the surface of any hardcore laid upon the ground and the upper surface of the floor and includes finishes which are laid as part of the permanent construction;<br><br>"moisture" includes water vapour and liquid water; |

This Technical Guidance Document is divided into three sections.

Section 1 relates to the requirements in C1 and C2.

Section 2 relates to the requirement in C3.

Section 3 relates to the requirement in C4.

# Section 1

# SITE PREPARATION AND SITE DRAINAGE

| | | |
|---|---|---|
| Preparation of site. | C1 | The ground to be covered by a building shall be reasonably free from vegetable matter. |
| Subsoil drainage. | C2 | Subsoil drainage shall be provided if necessary so as to prevent the passage of ground moisture to the interior of the building or damage to the fabric of the building. |

1.1 Relevant guidance is contained in CP 102 : 1973 Code of practice for protection of buildings against water from the ground and BS 8102: 1990 Code of practice for protection of buildings against water from the ground, which partially replaces CP 102: 1973. Relevant guidance is also contained in BS 8301: 1985 Section 3.10 ground water drainage. Additional guidance may be obtained from codes/standards listed in sections 2 and 3.

1.2 The following paragraphs (1.3 to 1.9) give some guidance to good practice insofar as it relates to non-complex buildings of normal design and construction.

## ORGANIC MATERIAL

1.3 Turf and other vegetable matter should be removed from the ground to be covered by the building at least to a depth sufficient to prevent later growth.

1.4 Where the ground to be covered by the building contains tree roots or readily compressible material (even if it contains no organic material) which could affect the stability of the building, building services (such as below ground drainage) should be sufficiently robust or flexible to resist or accommodate movement. Joints should be made so that roots will not penetrate them.

## SITE DRAINAGE

1.5 The guidance which follows assumes that the site of the building is not subject to flooding or, if it is, that appropriate steps are being taken.

1.6 The water table is likely to be high where the ground is damp in dry weather, where the type of vegetation indicates damp ground, or where the site of the building is surrounded by higher ground.

1.7 Where the extent of ground water could affect the stability of the building, or where the water table can rise to within 0.25 m of the lowest floor of the building, either the ground to be covered by the building should be drained by gravity or other effective means of safeguarding the building should be taken. Where surface water could enter or adversely affect the building, appropriate measures should be taken (see paragraph 1.9).

1.8 If an active subsoil drain is cut during excavation the following steps should be taken (see Diagram 1):

(a) if it is to pass through the building, it should be relaid in pipes with sealed joints and have access points outside the building, or

(b) it should be diverted around the building, or

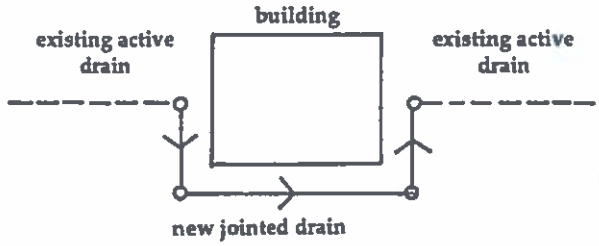
(c) it should be diverted to another outfall.

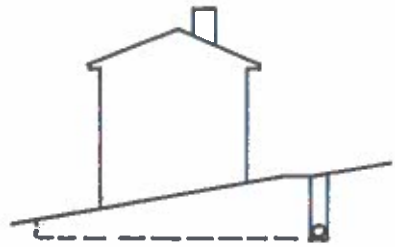
Where new subsoil drainage is required it should be provided as illustrated in Diagram 2.

1.9 As an alternative to providing or rerouting subsoil drainage, and where adequate measures are taken to ensure structural stability - see Technical Guidance Document A - additional measures may be taken to prevent the passage of ground moisture to the inside of the building, or parts of the fabric of the building, which would be adversely affected (see requirement C4).

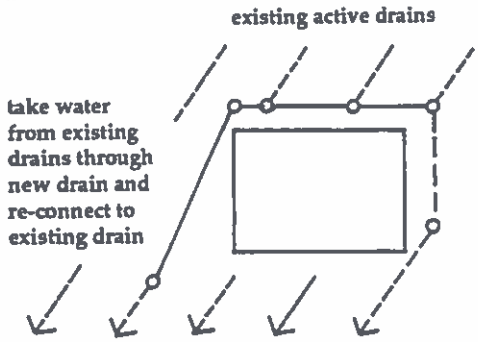
## Diagram 1 Subsoil drain cut during excavation

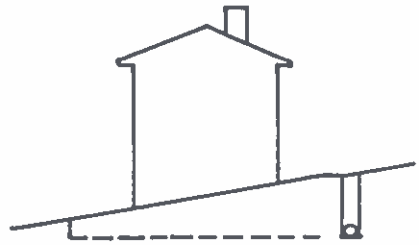

(a) Single drain re-laid under building



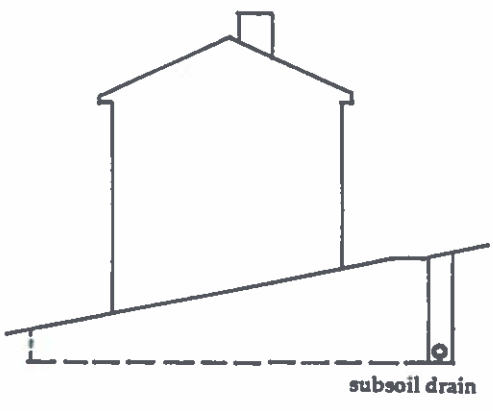

(b) Single drain diverted




(c) More than one drain diverted

## Diagram 2 Protection against ground moisture

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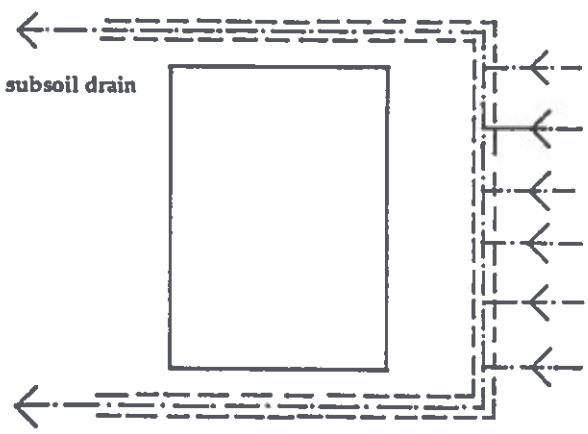



plan

# Section 2

# CONTAMINANTS

| | | |
|---|---|---|
| **Dangerous substances.** | C3 | Precautions shall be taken to avoid danger to health and safety caused by substances (including contaminants) found on or in the ground to be covered by a building. |
| **Definition for this Part.** | | In this Part, "contaminant" includes any substance which is or could become flammable, explosive, corrosive, toxic or radioactive and any deposits of faecal or animal matter. |

## INVESTIGATION OF SITE

2.1 The ground to be covered by a building includes the ground to be covered by its foundations.

2.2 In all cases, appropriate site investigations should be undertaken to check for the presence of contaminants. Contamination may arise from sources outside of the site e.g. landfill.

2.3 As a preliminary measure, investigation of previous uses of a site should be considered e.g. from local knowledge or by examination of local authority planning records. Examples of sites which are particularly likely to have been contaminated by their past or present uses are given in Table 1. Some signs of the possible presence of contaminants are given in Table 2.

2.4 Detailed guidance on the identification and investigation of sites is contained in BSI publications BS 5930:1981 Code of practice for site investigation, and DD 175:1988 Code of practice for the identification of potentially contaminated land and its investigation.

**Table 1 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 or ground within 250 metres of such sites
- Metal mines, smelters, foundries, steel works and metal finishing works
- 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

## REMEDIAL MEASURES

2.5 If the presence of contaminants is confirmed, the local authority should be informed and appropriate remedial action should be undertaken.

2.6 In the most hazardous conditions, only the total removal of contaminants can provide a complete remedy. In other cases, remedial measures may reduce the risks to acceptable levels. In all cases, action should only be undertaken with the benefit of expert advice.

**Table 2 Possible contaminants**

| Signs of possible contamination | Possible contaminant |
|---|---|
| (a) Vegetation (absence, poor or unnatural growth) | metals, metal compounds<br>organic compounds, gases |
| (b) Surface materials (unusual colours and contours may indicate wastes and residues) | metals, metal compounds<br>oily and tarry wastes<br>asbestos (loose)<br>other fibres<br>organic compounds including phenols<br>potentially combustible material including coal and coke dust<br>refuse and waste |
| (c) Fumes and odours (may indicate organic chemicals at very low concentrations) | flammable, explosive and asphyxiating gases including methane and carbon dioxide<br>corrosive liquids<br>faecal, animal and vegetable matter (biologically active) |
| (d) Drums and containers (whether full or empty) | various |

## RADON

2.7 Radon is a naturally occurring radioactive gas. The Nuclear Energy Board carry out surveys with a view to identifying areas where elevated levels of radon accumulation are likely to occur. When designing/constructing a building in any of these areas, precautions against entry of radon may be necessary. The Nuclear Energy Board should be consulted for further information on the affected areas.

2.8 Guidance on appropriate measures to be taken in the design and construction of buildings is contained in the Environmental Research Unit booklet "Radon in Buildings".

# Section 3

# RESISTANCE TO WEATHER AND GROUND MOISTURE

| | | |
|---|---|---|
| **Resistance to weather and ground moisture.** | **C4** | **The floors, walls, and roof of a building shall be so designed and constructed as to prevent the passage of moisture to the inside of the building or damage to the fabric of the building.** |
| **Definition for this Part.** | | **In this Part-**<br>**"floor" includes any base or structure between the surface of the ground or the surface of any hardcore laid upon the ground and the upper surface of the floor and includes finishes which are laid as part of the permanent construction;**<br><br>**"moisture" includes water vapour and liquid water;** |

## INTRODUCTION

This Section of the Technical Guidance Document is divided into three sub-sections:

(a) Sub-section 3.1 deals with floors next to the ground;

(b) Sub-section 3.2 deals with walls;

(c) Sub-section 3.3 deals with cladding for external walls and roofs.

There are several references in this Section to moisture damage. The damage in question is damage so serious that it would produce deterioration in a material or structure to the point that it would present a danger to health or safety or (if it is an insulating material) that its performance would be substantially and permanently reduced.

Damage can be avoided either by preventing moisture from reaching materials which would be damaged or by using materials which will not be damaged by moisture.

## Sub-section 3.1

## FLOORS NEXT TO THE GROUND

3.1.1 A floor next to the ground should:

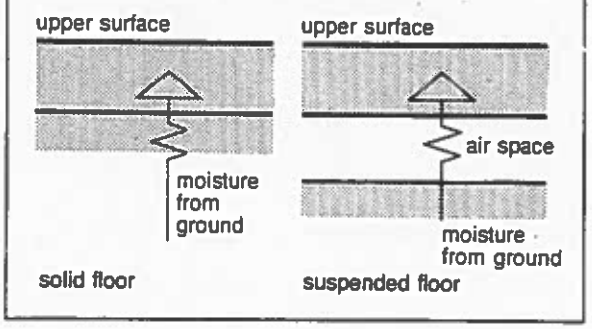
(a) prevent ground moisture from reaching the upper surface of the floor (see Diagram 3); and

(b) not be damaged by moisture from the ground.

3.1.2 Guidance in relation to dealing with moisture from the ground is contained in CP 102:1973 Protection of buildings against water from the ground and in BS 8215: 1991 Code of practice for design and installation of damp proof courses in masonry construction.

3.1.3 The following paragraphs (3.1.4 to 3.1.9) give some guidance to good practice insofar as it relates to non-complex buildings of normal design and construction.

**Diagram 3 Floor**



## GROUND SUPPORTED FLOORS

3.1.4 A ground supported floor, unless it is liable to be subject to ground water pressure, should be constructed of dense concrete laid on a hardcore bed and incorporate a damp proof membrane as follows (see Diagram 4):

(a) The concrete should be at least 150 mm thick (but thicker if the structural design requires) and composed of concrete grade C10P of BS 5328 or, if there is embedded steel, concrete of grade C30P of BS 5328.

(b) The hardcore bed should be at least 150 mm thick and should be of broken stones, broken brick or similar suitable material well compacted and clean and free from matter liable to cause damage to the concrete.

(c) The damp-proof membrane may be located above or below the concrete, and should be continuous with the damp-proof courses in walls (see Diagram 5).

**Diagram 4 Ground supported floor**

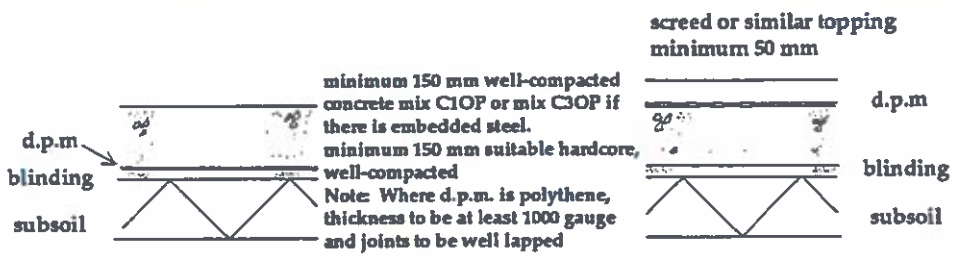
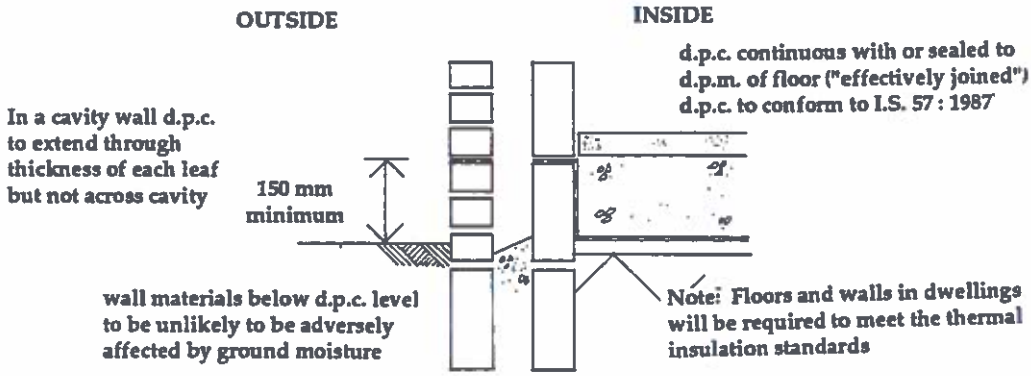



**Diagram 5 Damp proof membrane continuous with damp proof course**

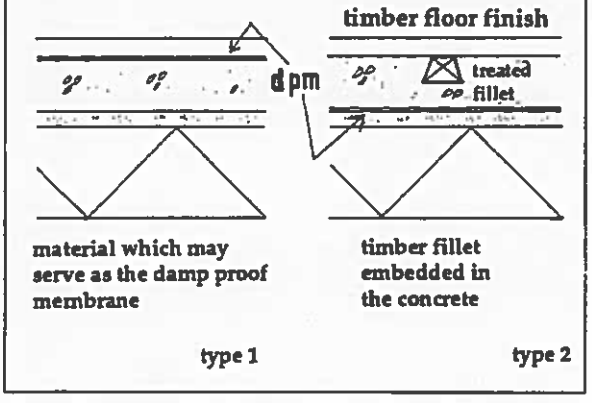


3.1.5 A damp-proof membrane laid below the concrete should be at least 1000 gauge polythene sheet, laid with the joints sealed, on a bed of blinding material which will not damage the sheet.

3.1.6 A damp-proof membrane laid above the concrete should be either polythene sheet as described in paragraph 3.1.5 (but without the blinding material) or three coats of cold applied bitumen solution or similar moisture and water-vapour resisting material. In each case the membrane should be protected by either a screed or a floor finish unless it is pitchmastic or similar material intended to serve as a floor finish.

3.1.7 A timber floor finish laid directly on concrete may be bedded in a material which may also serve as a damp-proof membrane. Timber fillets laid in the concrete as a fixing for a floor finish should be treated with an effective preservative. Some preservative treatments are described in BS 1282:1975 Guide to the choice, use and application of wood preservatives (see Diagram 6).

**Diagram 6 Ground supported floor-finishes**




## SUSPENDED TIMBER GROUND FLOORS

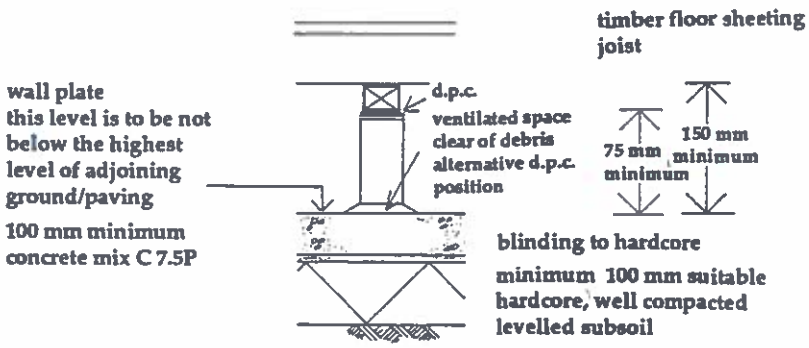
3.1.8 A suspended timber floor next to the ground should be built as follows (see Diagram 7):

(a) The ground should be covered in concrete at least 100 mm thick, and composed of concrete grade C7.5P of BS 5328. The concrete should be laid on a hardcore bed at least 100 mm thick of broken stones, broken brick or similar suitable material, well compacted and clean and free from matter liable to cause damage to the concrete. The concrete should be so laid that its top surface is not below the highest level of the surface of the ground or paving adjoining any external wall of the building.

(b) There should be a ventilated air space measuring at least 75 mm from the concrete to the underside of any wall plates and at least 150 mm to the underside of the suspended timber floor (or insulation if provided). Each external wall should have ventilation openings placed so that the ventilating air will have a free path between opposite sides and to all parts. The openings should be large enough to give an actual opening of at least equivalent to 1500 mm² for each metre run of wall. Any pipes needed to carry ventilating air should have a diameter of at least 100 mm.

(c) There should be a damp-proof course conforming to I.S. 57 : 1987, BS 743, BS 6398 or BS 6515 provided in such positions as to ensure that moisture from the ground cannot reach any timber or other material which would be adversely affected by it.

**Diagram 7 Suspended timber ground floor**




## SUSPENDED CONCRETE GROUND FLOORS

3.1.9 A suspended concrete floor should be built as follows (see Diagram 8):

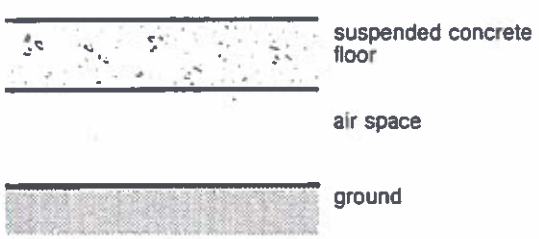
(a) The floor should be built of in-situ concrete at least 100 mm thick (but thicker if the structural design requires) containing at least 300 kg of cement for each $m^3$ of concrete, or of precast concrete construction with or without infilling slabs.

(b) Reinforcing steel should be protected by concrete cover of at least 40 mm if the concrete is in-situ, and at least the thickness required for normal exposure if the concrete is precast.

(c) Ventilated air space should be provided measuring at least 150 mm clear from the ground to the underside of the floor (or insulation if provided).

(d) Each external wall should have ventilation openings placed so that the ventilating air will have a free path between opposite sides and to all parts. The openings should be large enough to give an actual opening of at least equivalent to 1500 $mm^2$ for each metre run of wall.

**Diagram 8 Suspended concrete ground floor**




## Sub-section 3.2

## WALLS

3.2.1 All walls should:

(a) prevent moisture from the ground from reaching the inside of the building (see Diagram 9), and

(b) not be damaged by moisture from the ground, and

(c) not carry moisture from the ground to any part of the building which would be damaged by it.

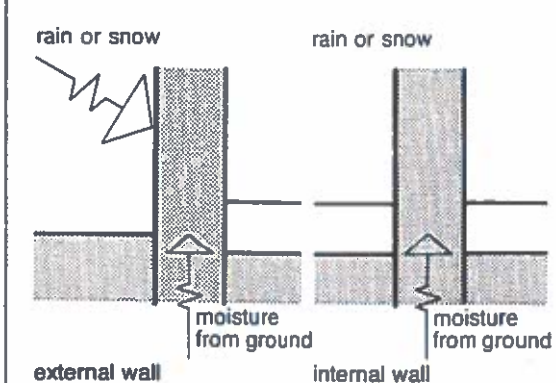
3.2.2 External walls, in addition to meeting the requirements of 3.2.1, should:

(a) resist the penetration of rain or snow to the inside of the building, and

(b) not be damaged by rain or snow, and

(c) not carry rain or snow to any part which would be damaged by it.

**Diagram 9 Walls**



## MOISTURE FROM THE GROUND (ALL WALLS)

3.2.3 CP 102:1973: Code of practice for protection of buildings against water from the ground gives methods of preventing entry of ground and surface water into buildings from surrounding areas. BS 8215: 1991 Code of practice for design and installation of damp proof courses in masonry construction contains recommendations for the selection, design and installation of damp proof courses (DPC's) in both solid and cavity masonry construction.

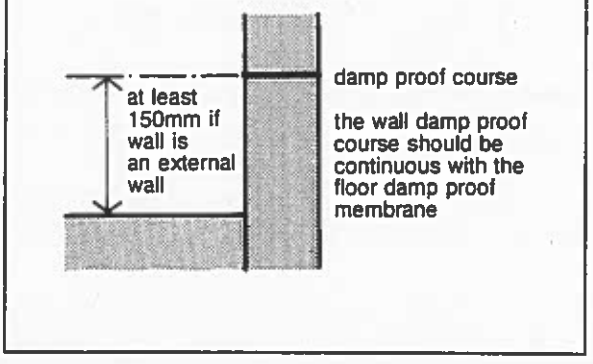
3.2.4 The following is some guidance to good practice insofar as it relates to non-complex buildings of normal design and construction. (See Diagram 10).

(a) Walls should have a damp-proof course of bituminous material, engineering bricks or slates in cement mortar or any other material that will prevent the passage of moisture. The damp-proof course should be continuous with any damp-proof membrane in the floors.

(b) If the wall is an external wall, the damp-proof course should be at least 150 mm above the finished level of adjoining ground or paving.

(c) If the wall is an external cavity wall, the cavity should be taken down at least 150 mm below the level of the lowest damp-proof course or a damp-proof tray should be provided so as to prevent rain or snow passing to the inner leaf.

**Diagram 10** External or internal wall




## MOISTURE FROM OUTSIDE (EXTERNAL WALLS)

3.2.5 I.S. 325: Part 1: 1986 Use of Masonry, Part 1, Structural Use of Unreinforced Masonry covers recommendations for the structural design of unreinforced masonry constructed of normal density blocks and bricks.

BS 5628 Code of practice for the use of masonry, Part 3: 1985 Materials and components, design and workmanship contains recommendations for design and execution of brick and block masonry.

BS 5390: 1976 (1984) Code of practice for stone masonry contains recommendations for the design, construction and selection of materials for walls ashlared with stone or cast stone and rubble or rubble faced walls of stone or cast stone.

BS 5262: 1976 Code of practice for external rendered finishes includes recommendations on rendering on all common types of old or new backgrounds.

3.2.6 The following paragraphs (3.2.7 to 3.2.10) give some guidance to good practice insofar as it relates to non-complex buildings of normal design and construction.

3.2.7 An external cavity wall may be constructed of two leaves with the outer leaf separated from the inner leaf by a drained air space or in any other way which will prevent moisture from the outside being carried to the inner leaf.

3.2.8 An external cavity wall may be built as follows:

(a) outer leaf masonry (bricks, blocks, stone or cast stone), and

(b) cavity at least 50 mm wide. The cavity should only be bridged by wall ties or by damp-proof trays provided to prevent moisture being carried to the inner leaf, and

(c) inner leaf masonry or frame with lining.

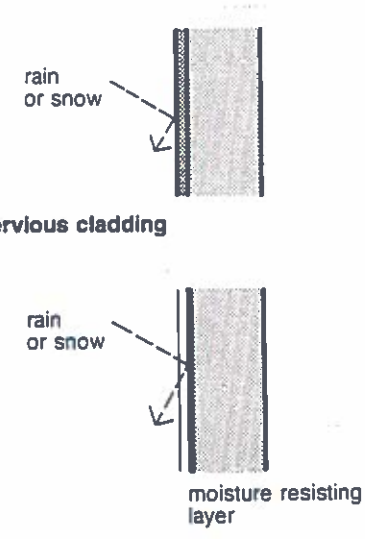
3.2.9 An insulating material may be placed in the cavity between an outer leaf and inner leaf of masonry construction provided that -

where the cavity is to be filled, only insulating material which has been shown to satisfactorily prevent the passage of moisture to the inner leaf may be used, and

where the cavity is to be partially filled with insulating material, the residual cavity should be not less than 40 mm wide.

3.2.10 For guidance regarding thermal insulation refer to Technical Guidance Document L.

**Diagram 11 Cladding (walls and roofs)**




(a) Impervious cladding

(b) Weather-resisting cladding backed by moisture-resisting layer

## Sub-section 3.3

## CLADDING FOR EXTERNAL WALLS AND ROOFS

3.3.1 External walls and roofs should:

(a) resist the penetration of rain or snow to the inside of the building,

(b) not be damaged by rain or snow, and

(c) not carry rain or snow to any part of the building which would be damaged by it. (see Diagram 11).

3.3.2 Guidance in relation to cladding is contained in the following documents. They describe the materials and contain design guidance including recommendations for fixing.

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

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

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

BS 6457 : 1984 Specification for reconstructed stone masonry units.

I.S. 7 : Part 2 : 1983 Symmetrical Asbestos Cement Corrugated Sheets.

BS 5247 Code of practice for sheet roof and wall coverings Part 14 : 1975 Corrugated asbestos cement.

CP 143 Code of practice for sheet roof and wall coverings Part 1 : 1958 Aluminium, corrugated and troughed.

I.S. 145 : 1985 Zinc and Aluminium Zinc Coated Corrugated Steel Sheets.

BS 6561 : 1985 Specification for zinc alloy sheet and strip for building.

CP 143 Code of practice for sheet roof and wall coverings Part 5 : 1964 Zinc.

CP 143 Code of practice for sheet roof and wall coverings Part 10 : 1973 Galvanised corrugated steel.

BS 2870 : 1980 Specification for rolled copper and copper alloys : sheet, strip and foil.

CP 143 Code of practice for sheet roof and wall coverings Part 12 : 1988 Copper.

CP 143 Code of practice for sheet roof and wall coverings Part 15 : 1986 Aluminium.

CP 143 Code of practice for sheet roof and wall coverings Part 16 : 1974 Semi-rigid asbestos bitumen sheet.

BS 1178 : 1982 Specification for milled lead sheet for building purposes.

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

BS 5516 : 1991 Code of practice for design and installation of sloping and vertical patent glazing.

BS 6262 : 1982 Code of practice for glazing for buildings.

BS 4868 : 1972 Specification for profiled aluminium sheet for building.

BS 5427 : 1976 Code of practice for performance and loading criteria for profiled sheeting in building.

3.3.3 The following paragraphs (3.3.4 to 3.3.9) give some guidance to good practice insofar as it relates to non-complex buildings of normal design and construction.

3.3.4 Cladding can be designed to protect a building from rain or snow (often driven by the wind) either by holding the rain or snow at the face of the building or by stopping it from penetrating beyond the back of the cladding. (see Diagram 11).

3.3.5 Cladding should be adequate if:

(a) it is jointless or has sealed joints, and is impervious to moisture (so that moisture will not enter the cladding), or

(b) it has overlapping dry joints, is impervious or weather-resisting, and is backed by a material which will direct rain or snow which enters the cladding towards the outside face.

3.3.6 Some materials can deteriorate rapidly without special care and they should only be used as the weather-resisting part of a wall or roof if certain conditions are met (see Technical Guidance Document D Materials and Workmanship). The weather-resisting part of a wall or roof does not include paint nor does it include any coating, surfacing or rendering which will not itself provide all the weather resistance.

3.3.7 Cladding may be:

(a) impervious, including metal, plastics, glass and bituminous products, or

(b) weather-resisting, including natural stone or slate, cement based products, fired clay and wood, or

(c) moisture-resisting, including bituminous and plastic products lapped, if used as a sheet material, at the joints.

Notes:

(i) Materials should be permeable to water vapour unless there is a ventilated space directly behind the material. Ventilated spaces behind cladding materials may require cavity barriers and fire stopping. In such cases reference should be made to Technical Guidance Document B - Fire.

(ii) Jointless materials and sealed joints should allow for structural and thermal movement.

3.3.8 Dry joints between cladding units should be designed so that rain or snow will not pass through them. Alternatively, the cladding should be so designed that rain or snow which enters the joints will be directed towards the exposed face and will not penetrate beyond the back of the cladding. (Note: Whether dry joints are suitable will depend on the design of the joint or the design of the cladding and the severity of the exposure to wind and rain).

3.3.9 Each sheet, tile and section of cladding should be securely fixed.

3.3.10 Guidance in relation to roof coverings is contained in the following documents. They describe the materials and contain design considerations including recommendations for fixing.

BS 5534 Code of practice for slating and tiling Part 1 : 1990 Design

BS 5534 Code of practice for slating and tiling Part 2 : 1986 Design charts for fixing roof slating and tiling against wind uplift.

I.S. 7 : Part 1 : 1982 Asbestos-Cement Slates

I.C.P. 2 : 1982 Slating and Tiling.

I.S. 3 : 1972 Concrete Roofing Tiles.

BS 1178 : 1982 Specification for milled lead sheet for building purposes.

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

BS 2870 : 1980 Specification for rolled copper and copper alloys : sheet, strip and foil.

I.C.P. 1 : 1986 Copper Roof Covering.

BS 6561 : 1985 Specification for zinc alloy sheet and strip for building.

CP 143 Code of practice for sheet roof and wall coverings Part 5 : 1964 Zinc.

CP 143 Code of practice for sheet roof and wall coverings Part 1 : 1958 Aluminium, corrugated and troughed.

I.S. 145 : 1985 Zinc and Aluminium Zinc Coated Corrugated Steel Sheets.

I.S. 7 : Part 2: 1983 Symmetrical Asbestos-Cement Corrugated Sheets.

BS 5247 Code of practice for sheet roof and wall coverings Part 14 : 1975 Corrugated asbestos-cement.

BS 5516 : 1977 Code of practice for patent glazing.

CP 144 Roof coverings Part 4 : 1970 Mastic asphalt.

I.S. 36 : Part 1 : 1986 Bitumen Roofing Felts, Part 1, Fibre and Glass Fibre Based Felts.

I.S. 36 : Part 2: 1987 Bitumen Roofing Felts, Part 2 Polyester Based Felts.

CP 144 Roof coverings Part 3 : 1970 Built-up bitumen felt.

# Standards and other references

I.S. 3 : 1972 Concrete Roofing Tiles;

I.S. 7 : Part 1 : 1982 Asbestos-Cement Slates;

I.S. 7 : Part 2: 1983 Symmetrical Asbestos Cement Corrugated Sheets;

I.S. 36 : Part 1 : 1986 Bitumen Roofing Felts, Part 1, Fibre and Glass Fibre Based Felts;

I.S. 36 : Part 2 : 1987 Bitumen Roofing Felts Part 2, Polyester Based Felts;

I.S. 57 : Part 1 : 1987 Damp Proof Courses, Part 1, Bitumen Damp Proof Courses;

I.S. 57 : Part 2 : 1987 Damp Proof Courses, Part 2, Polyethylene Damp Proof Courses;

I.S. 145 : 1985 Zinc and Aluminium Zinc Coated Corrugated Steel Sheets;

I.S. 325 : Part 1 : 1986 Use of Masonry, Part 1, Structural Use of Unreinforced Masonry;

I.C.P.1 : 1966 Copper Roof Covering;

I.C.P.2 : 1982 Slating and Tiling;

Radon in Buildings published by Environmental Research Unit, St. Martin's House, Waterloo Road, Dublin 4;

BS 743 : 1970 Specification for materials for damp proof courses AMD 2503, AMD 4336, AMD 4594;

BS 1178 : 1983 Specification for milled load sheet for building purposes;

BS 1282 : 1975 Guide to the choice, use and application of wood preservatives;

BS 2870 : 1980 Specification for rolled copper and copper alloys: sheet, strip and foil;

BS 4868 : 1972 Specification for profiled aluminium sheet for building;

BS 5247 Code of practice for sheet roof and wall coverings Part 14: 1975 Corrugated asbestos-cement AMD 2821, AMD 3502;

BS 5262 : 1976 Code of practice. External rendered finishes AMD 2103, AMD 6246;

BS 5328 : 1981 Methods for specifying concrete including ready-mixed concrete AMD 4862, AMD 4970;

BS 5390 : 1976 (1980) Code of practice for stone masonry AMD 4272;

BS 5427 : 1976 Code of practice for performance and loading criteria for profiled sheeting in building;

BS 5516 : 1991 Code of practice for design and installation of sloping and vertical patent glazing;

BS 5534 : Code of practice for slating and tiling Part 1: 1990 Design;

BS 5534 Code of practice for slating and tiling Part 2 : 1986 Design charts for fixing roof slating and tiling against wind uplift ;

BS 5628 Code of practice for use of masonry Part 3: 1985 Materials and components, design and workmanship AMD 4974;

BS 5930 : 1981 Code of practice for site investigation;

BS 6262 : 1982 Code of practice for glazing for buildings AMD 4063, AMD 4582;

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

BS 6457 : 1984 Specification for reconstructed stone masonry units;

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

BS 6561 : 1985 Specification for zinc alloy sheet and strip for building;

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

BS 8102 : 1990 Code of practice for protection of structures against water from the ground;

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

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;

BS 8301 : 1985 Code of practice for building drainage AMD 5904, AMD 6580

CP 102 : 1973 Code of practice for protection of buildings against water from the ground AMD 1511, AMD 2196, AMD 2470;

CP 143 Code of practice for sheet roof and wall coverings Part 1 : 1958 Aluminium, corrugated and troughed;

CP 143 Code of practice for sheet roof and wall coverings Part 5 : 1964 Zinc;

CP 143 Code of practice for sheet roof and wall coverings Part 10 : 1973 Galvanized corrugated steel;

CP 143 Code of practice for sheet roof and wall coverings Part 12 : 1988 Copper;

CP 143 Code of practice for sheet roof and wall coverings Part 15: 1973 (1986) Aluminium AMD 4473;

CP 143 Code of practice for sheet roof and wall coverings Part 16: 1974 Semi-rigid asbestos bitumen sheet;

CP 144 Roof coverings Part 3 : 1970 Built-up bitumen felt;

CP 144 Roof coverings Part 4 : 1970 Mastic asphalt AMD 6161;

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

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

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