**NBCMP**

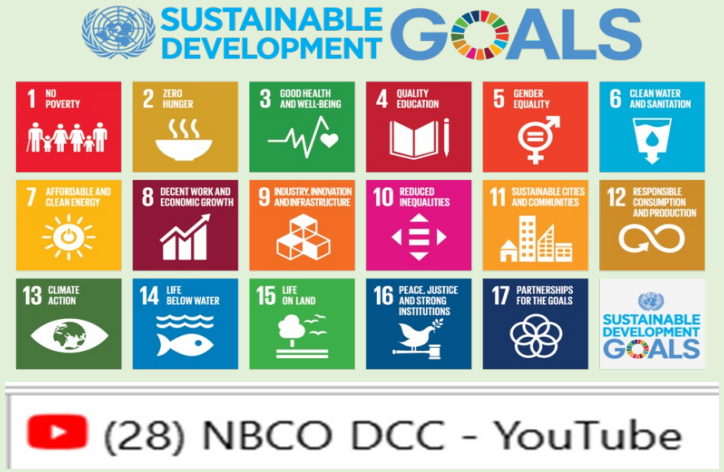
National Building Control Management Project

# National Building Control & National Market Surveillance Office


16th May 2024

- Education & Training
- Compliance Support
- Inspections
- BCMS
- Market Surveillance

support@nbco.gov.ie



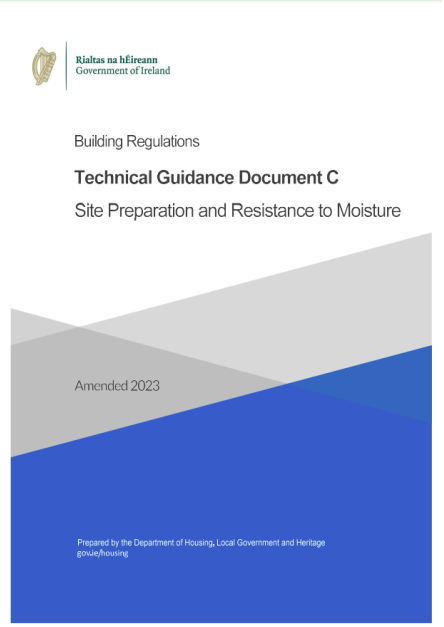

Website: www.localgov.ie
Twitter: @NBCOIreland
YouTube: NBCO DCC

# Part C & TGD C– Site Preparation and Resistance to Moisture- "the requirement"
## S.I. No. 138/2012 - Building Regulations (TGD Part A Amendment) Regulations

**C1 Preparation of site. -** The ground to be covered by a building shall be reasonably free from vegetable matter.
**C2 Subsoil drainage.** -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.
**C3 Dangerous substances.** -Reasonable 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.
**C4 Resistance to weather and ground moisture. -** 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.

**C5 Definitions for 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;
**"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;
**"moisture"** includes water vapour and liquid water.

## Technical Guidance Document C- Site Preparation and Resistance to Moisture-divided into three sections.




**Section 1** relates to the Requirements C1 and C2.
**Section 2** relates to the Requirement C3.
**Section 3** relates to the Requirement C4 and 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.

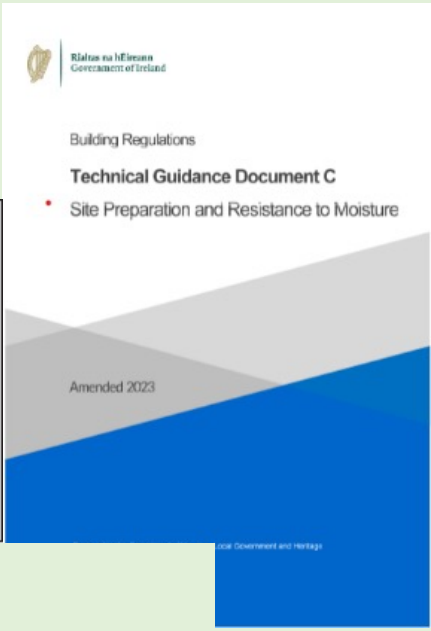
### Current Edition
- Technical Guidance Document C - Site Preparation and Resistance to Moisture (1997)(Amended 2023)

### Previous Editions
- Technical Guidance Document C – Site Preparation and Resistance to Moisture (1997)(Amendments 2020)
- Technical Guidance Document C- Site Preparation and Resistance to Moisture 1997 (2005 reprint)

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

| | | |
|---|---|---|
| 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. |




- ***C1 Preparation of Site****; 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*.
- Where the ground to be covered by the building contains tree roots or readily compressible 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.

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### Part C

**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.

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## TGD C– Site Preparation and Resistance to Moisture

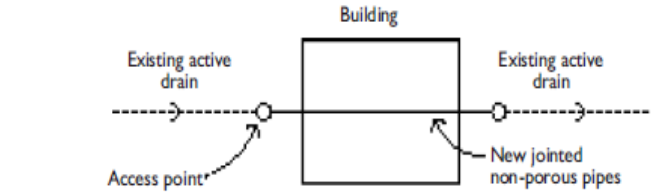
***C2 Subsoil drainage.*** *-Subsoil drainage shall be provided if necessary, so as to prevent the passage of ground moisture to the interior of the building or damage to the fabric of the building.*

- C2 -If an active subsoil drain is cut during excavation, the following steps should be taken :

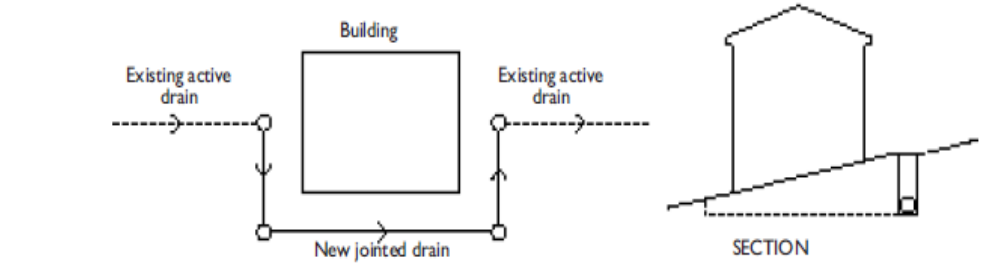
(a) if it is to pass through the building, it should be relaid in pipes with sealed joints and have access points outside the building, or

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

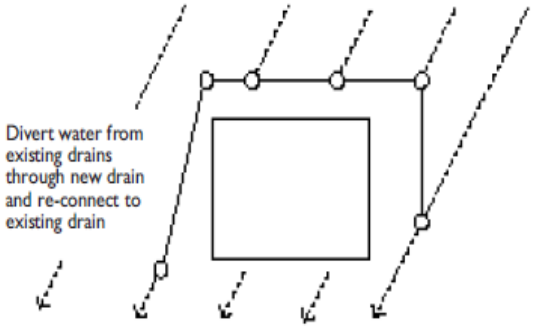
(c) it should be diverted to another outfall.




(a) SINGLE DRAIN RE-LAID UNDER BUILDING




(b) SINGLE DRAIN DIVERTED




(c) MORE THAN ONE DRAIN DIVERTED

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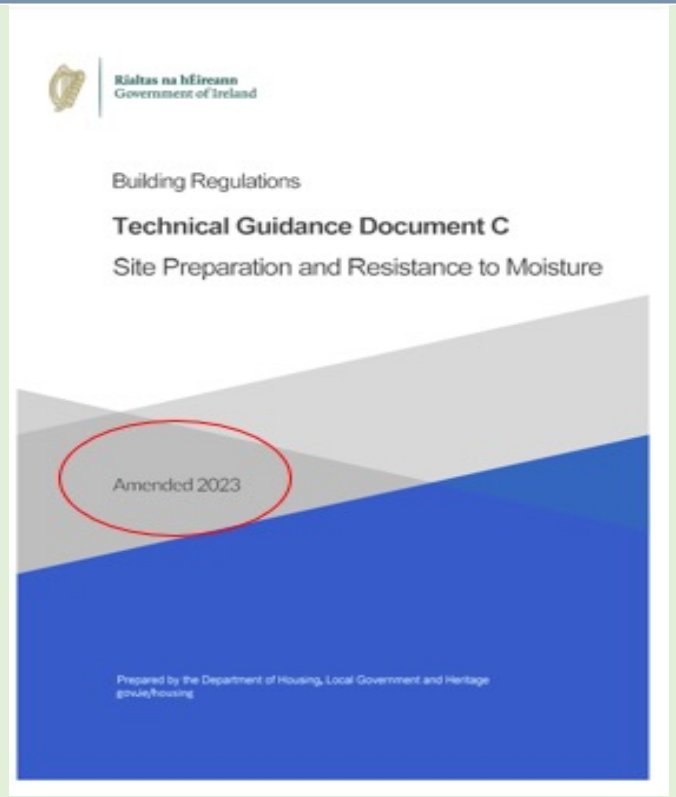
## TGD C– Site Preparation and Resistance to Moisture

***C3 Dangerous Substances**; Reasonable 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.*

- "contaminant" includes any substance which is or could become flammable, explosive, corrosive, toxic or radioactive and any deposits of faecal or animal matter;

**Section 2 addresses Radon for normal and high radon areas.**




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

- site investigations should be undertaken to check for the presence of contaminants.
- investigation of previous uses of a site should be considered

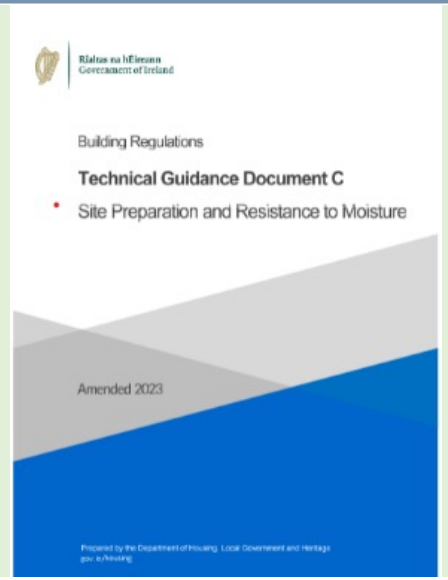
# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

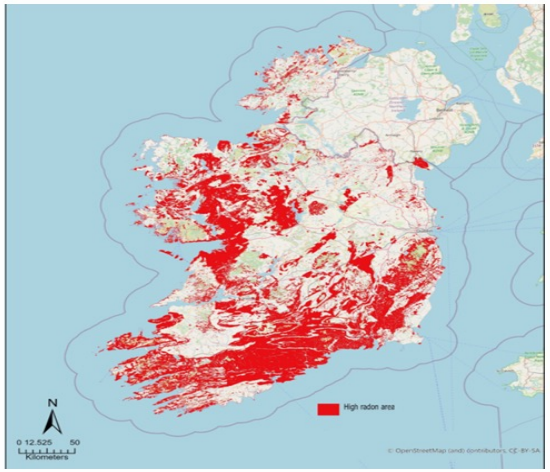
2.7 Radon is a naturally occurring radioactive gas. It enters buildings from the underlying soil and in certain cases can accumulate in a building to such a concentration that it is deemed to constitute a potential health hazard. Radon is deemed to be a risk factor for lung cancer, particularly for smokers.

The National Reference Level (NRL) for long-term exposure to Radon in Dwellings is 200 Becquerels per cubic metre, or 200Bq/m3 . Above this level the need for remedial action should be considered.

**The Radiological Protection Act 1991 (Ionising Radiation) Regulations 2019 (SI No. 30 of 2019) transposes the EURATOM Basic Safety Standards Directive – Council Directive 2013/59/EURATOM and sets a National Reference Level for Radon Gas in Workplaces of 300Bq/m3 annual average concentration.**




New digital map



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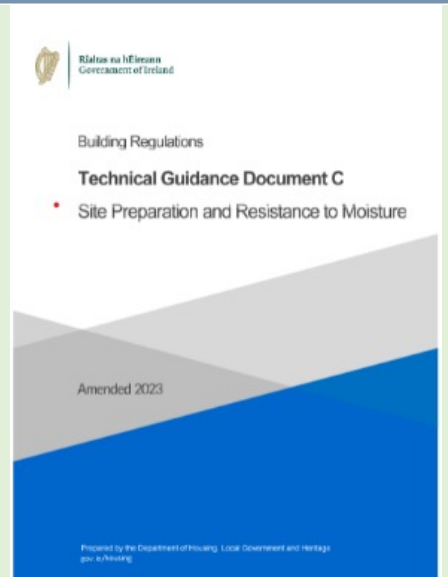
## TGD C– Site Preparation and Resistance to Moisture

- Radon Map showing risk areas
- Interactive Map EPA
- Red colour shows high risk
- Average radon level was 89Bq/m3
- Now due to changes it has reduced to 77Bq/m3

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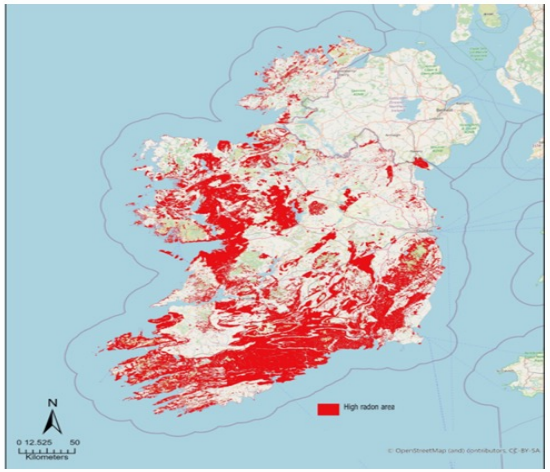

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## TGD D – Part D Materials and Workmanship

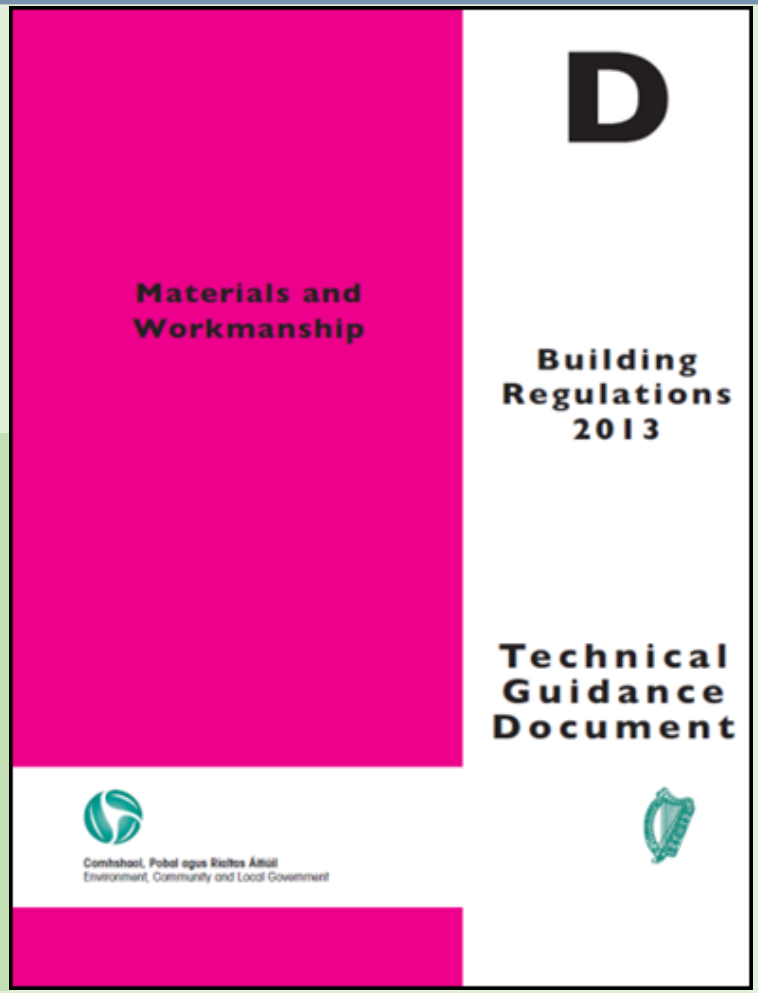
**D1 Materials and workmanship.**

All works to which these Regulations apply shall be carried out with proper materials and in a workmanlike manner.

Fitness of Materials 1.1 Requirement

D3 defines what is meant by “proper materials” for use in works. In assessing the fitness for use and conditions of use of a material/ product, consideration should be given to durability, safety, local climatic conditions (e.g. wind driven rain, humidity etc.) and other such issues.

While the primary route for establishing the fitness of a material for its intended use is through the recognised standardisation procedures referred to in paragraphs (a), (b) or (c) of Requirement D3, other methods may also be considered in establishing fitness including:



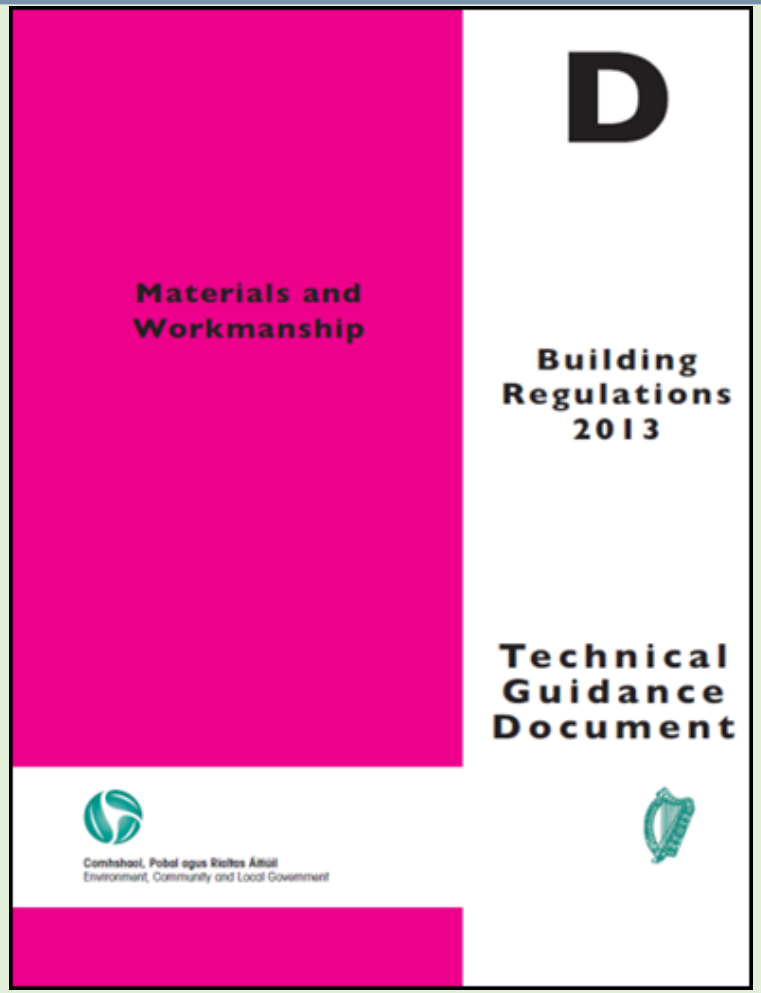
# National Building Control & National Market Surveillance Office

## TGD D – Part D Materials and Workmanship

**D3 Materials and workmanship.**

**"proper materials"** means 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 Marking in accordance with the provisions of the Construction Products Regulation;
(b) comply with an appropriate harmonised standard or European Technical Assessment in accordance with the provisions of the Construction Products Regulation; or
(c) comply with an appropriate Irish Standard or Irish Agrément Certificate or with an alternative national technical specification of any State which is a contracting party to the Agreement on the European Economic Area, which provides in use an equivalent level of safety and suitability.

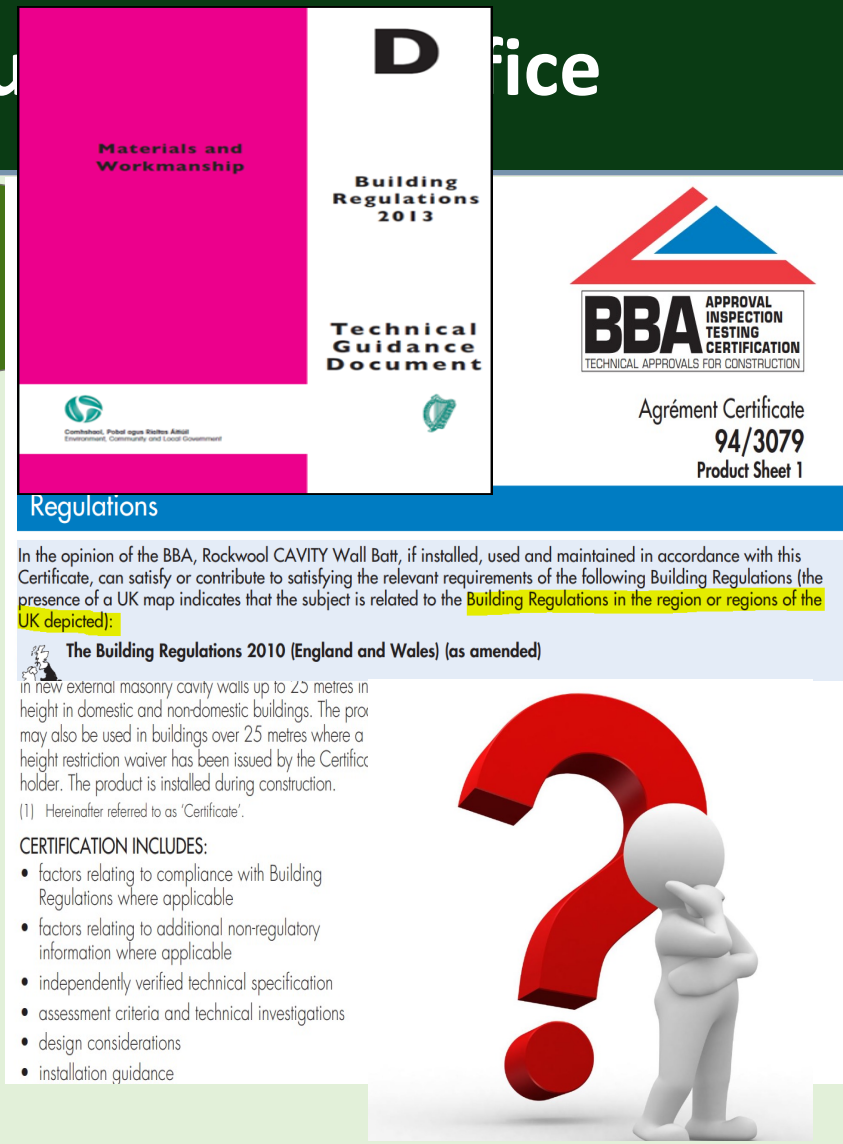


# National Building Control & National Market Su ffice

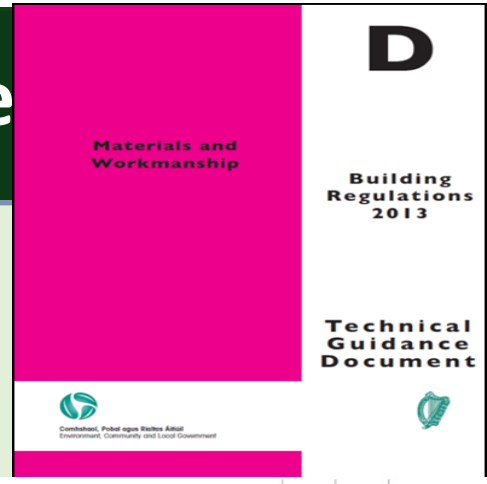
## TGD D – Part D Materials and Workmanship

Technical Guidance Documents D (Part D 2013 states in 0.10 The process of Agrément certification applies to those products and processes which do not fall within the scope of existing construction standards, either because they are innovative or because they deviate from established norms. NSAI Agrément assesses, specifies testing, and where appropriate, issues Agrément certificates confirming that new building products, materials, techniques and equipment are safe and fit for purpose **in accordance with the Irish Building Regulations** and with the terms of the certificate. Such certificates may be in addition to, but not conflict with, CE marking.

NSAI (National Standards Authority of Ireland) is an national certification authority for CE Marking and they may be of assistance to you;
ref: https://www.nsai.ie/certification/product-certification/ce-marking-construction-products/



# National Building Control & National Market Surveillance

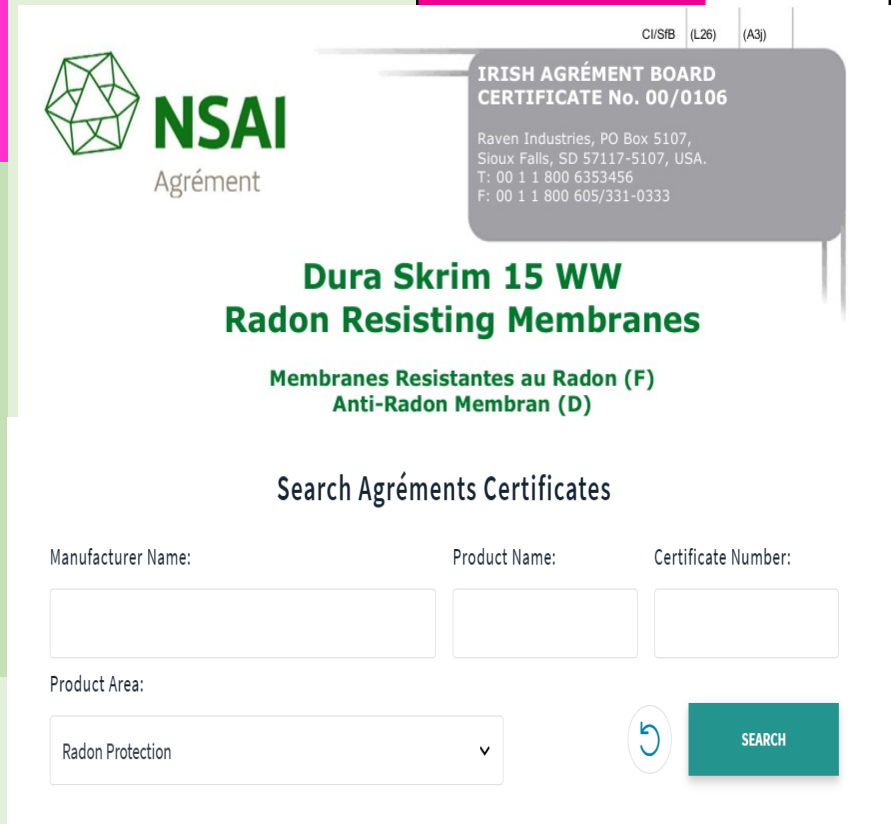



## TGD D – Part D Materials and Workmanship

**D1 Materials and workmanship.**

All works to which these Regulations apply shall be carried out with proper materials and in a workmanlike manner.

(a) Independent certification schemes by approved bodies e.g. the National Standards Authority of Ireland (NSAI). Such certification schemes may provide information on the performance of a product or certify that the material complies with the requirements of a recognised document and indicates it is suitable for its intended purpose and use. Accreditation of the body, by a member of the European cooperation for Accreditation (EA) such as the Irish National Accreditation Board (INAB), offers a way of ensuring that such certification can be relied on. All such certification schemes may be in addition to, but not conflict with, CE marking;



# National Building Control & National M

## TGD D – Part D Materials and Workmanship

### 4.5 CE MARKING

While CE marking is not applicable for radon membranes, where the product is used solely as a DPM, the manufacturer has taken responsibility of CE marking the Dura Skrim 15 WW Radon Resisting Membranes in accordance with harmonised European Standard IS EN 13967[4]. Reference should be made to the latest version of the manufacturer's DoP for current information on any essential characteristics declared by the manufacturer.

### 2.3 DELIVERY, STORAGE AND MARKING

Rolls are supplied individually or on pallets, in wrappers bearing the manufacturer's name and product description, NSAI Agrément identification mark, NSAI Agrément Certificate number and essential instructions for storage and installation.

### 2.4 INSTALLATION

#### 2.4.1 General

Guidance on the design of radon protection systems for new and existing buildings is given in the DHPLG document *Radon in Buildings*.

This Certificate does not contain a full set of installation instructions, but an overview of the procedures involved. For a full list of these instructions, refer to the Certificate holder's manuals. Should a conflict arise between this Certificate and the Certificate holder's manuals, this Certificate shall take precedence.

Search results: 9

| | | | | |
|---|---|---|---|---|
| CERTIFICATE NUMBER: 00/0106 | Dura Skrim 15 WW Radon Resisting Membranes | Manufacturer: Raven Industries | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 16/0388 | Juta GP Radon, Ground Gas, VOC, Air & Moisture Protection System | Manufacturer: JUTA A.S. | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 16/0386 | Laydex Polysump Radon Sump | Manufacturer: Laydex Ltd | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 17/0390 | MemTech Radon, Ground Gas, VOC, Air & Moisture Protection System | Manufacturer: MemTech Ltd | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 09/0328 | Necoflex RAM - Radon, Air & Moisture Protection System | Manufacturer: Necoflex Ltd | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 23/0438 | Protech Radon 400 | Manufacturer: The A.Proctor Group Ltd | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 18/0402 | RADEX 3000 High Performance Radon Membrane | Manufacturer: Laydex Ltd | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 03/0177 | Rhinoplast Super Gas & Rhinoplast Ultra Radon Barriers | Manufacturer: Principal Building Products Ltd | Product Area: Radon Protection | DOWNLOAD PDF |
| CERTIFICATE NUMBER: 05/0214 | Visqueen Ultimate RadonBlok Radon Air and Damp Protection System | Manufacturer: Visqueen | Product Area: Radon Protection | DOWNLOAD PDF |

# National Building Control & National Mark

## TGD C– Site Preparation and Resistance to Moisture

### 2.3.2 Procedure

The Laydex Polysump Radon Sump must be placed in an area of maximum percolation, that is, in the upper levels of hardcore. It should be placed as close as possible to the centre of the floor plan of the building and placed tight up against the radon barrier or concrete slab. One sump is sufficient for approximately each 250m$^2$.

The sump should be connected to the sealed pipework routed to the outside of the building. This should discharge to fresh air at high level.

The Laydex Polysump Radon Sump must be surrounded by selected hardcore Type B material (gas permeable unbound granular fill) as defined in SR 21[3] (4/40 $G_c$80/20 $GT_{NR}$ as per Table 3 of SR 21[3]). It should be made firm immediately after placing and be protected from site traffic before the floor slab has been laid.

NBCMP

National Building Control Management Project

(L26) (A3j) CI/SfB

NSAI Agrément

**IRISH AGRÉMENT BOARD CERTIFICATE No. 16/0386**

Laydex Ltd,
Unit 3 Allied Industrial Estate,
Kylemore Road,
Dublin 3.
T: 01 6426600
W: www.laydex.ie

## Laydex Polysump Radon Sump

**Puisard au Radon**
**Radon Ölwanne**

**NSAI Agrément (Irish Agrément Board)** is designated by Government to issue European Technical Approvals.

NSAI Agrément Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2019**.

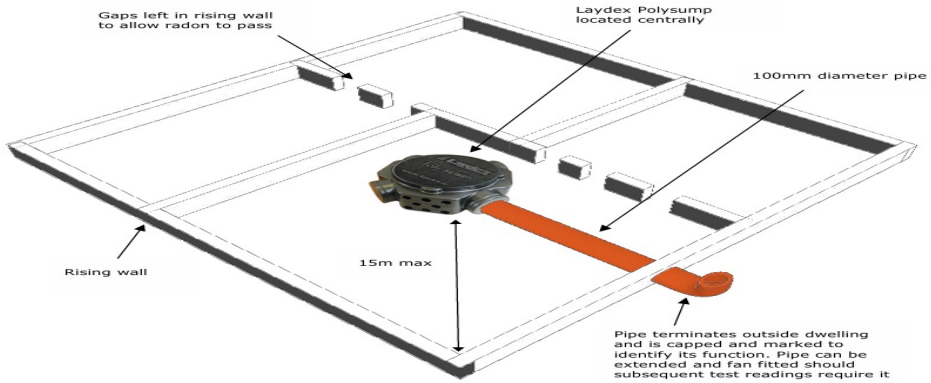



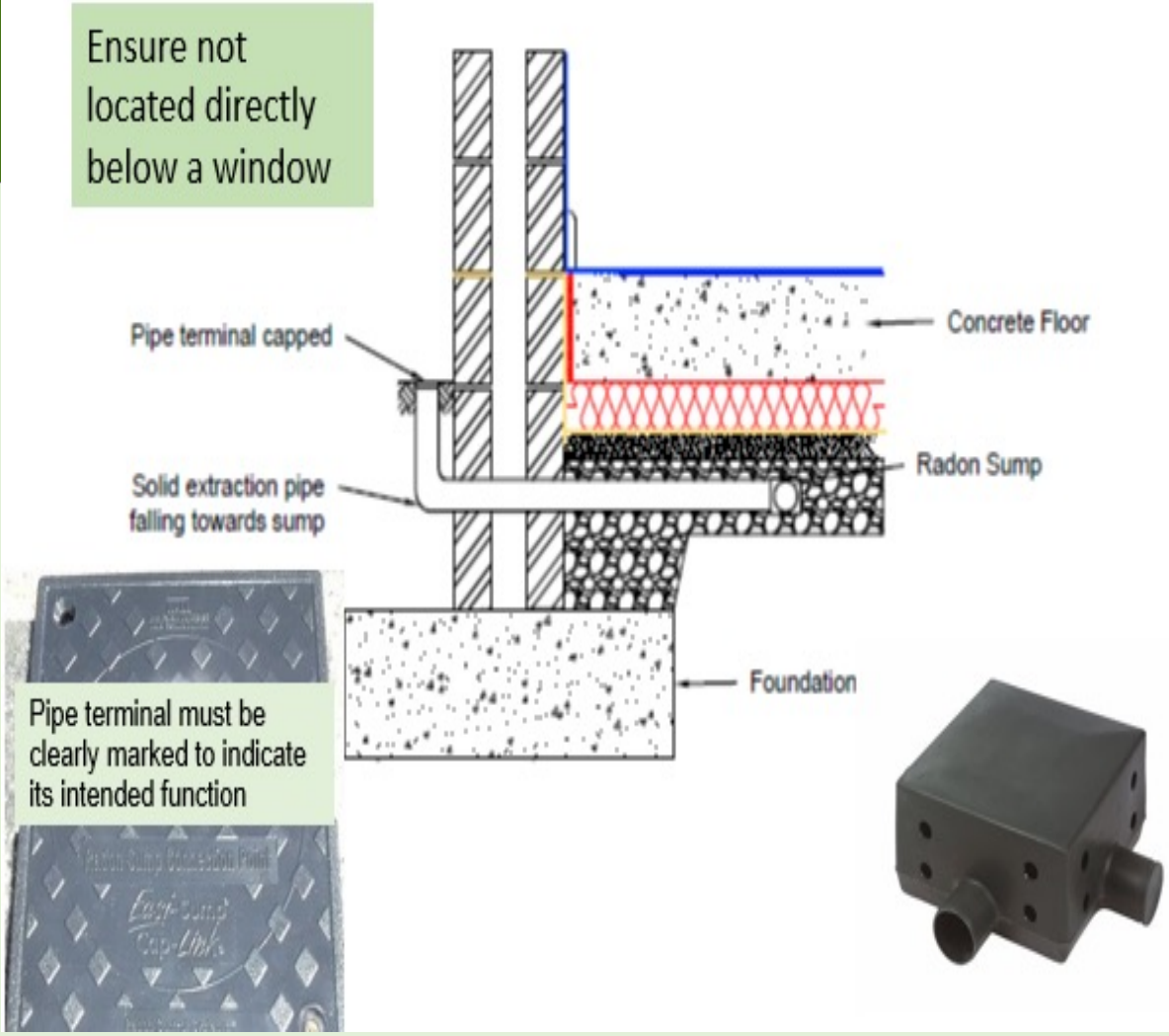

**Figure 1: Sump layout**

# National Building Control & National Market Surveillance Office

**TGD C– Site Preparation and Resistance to Moisture**

## Standby Radon Sump

- The hardcore layer should be clean, dry and gas permeable (post compaction).
- Under these conditions the activated sump should influence an area of 250 $m^2$ or 15 m from the sump
- Internal walls should not obstruct the flow.
- Pipework connecting sumps should terminate outside the external walls of the building or in the attic space.



# National Building Control & National Ma

## TGD C– Site Preparation and Resistance to Moisture

- **For dwellings and long-stay residential buildings:**
  - A standby sump is required in all areas.
  - A standby sump and a Radon resisting membrane is required in areas designated as High Radon areas.
- Specific guidance or similar measures are required for all other buildings.

- For the future extraction of Radon if required.
- Piped to the outside.
- Pipe terminated and capped.
- Pipe terminal clearly marked.

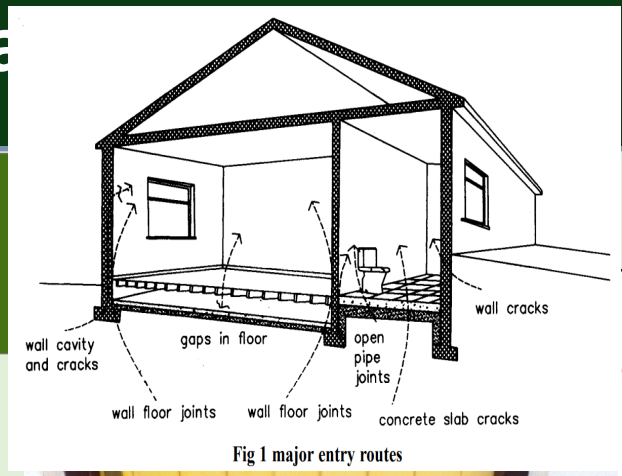
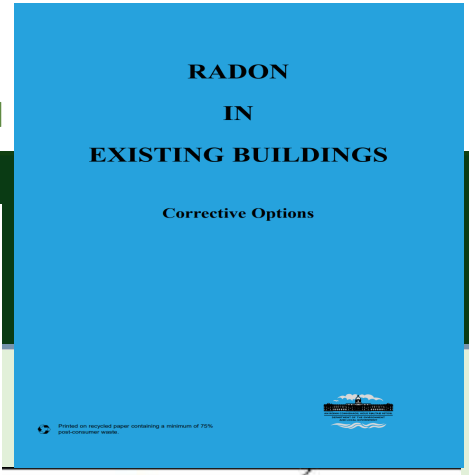
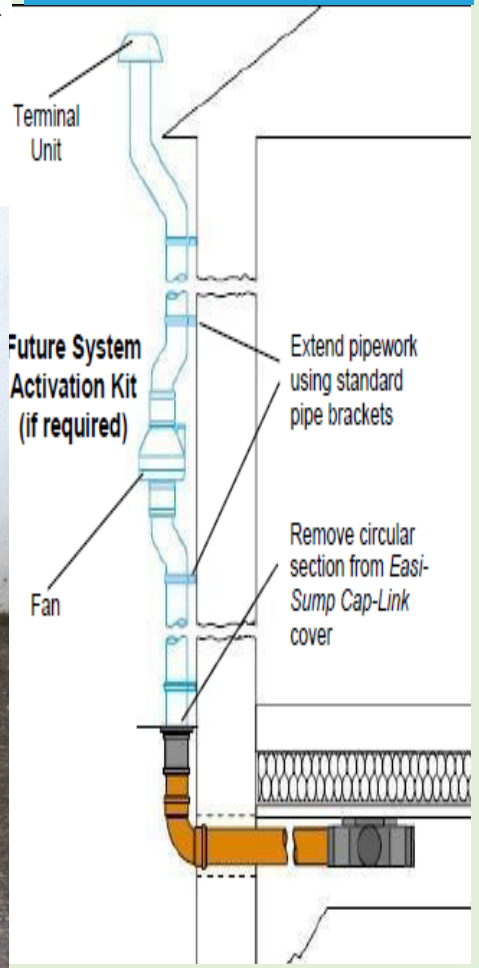
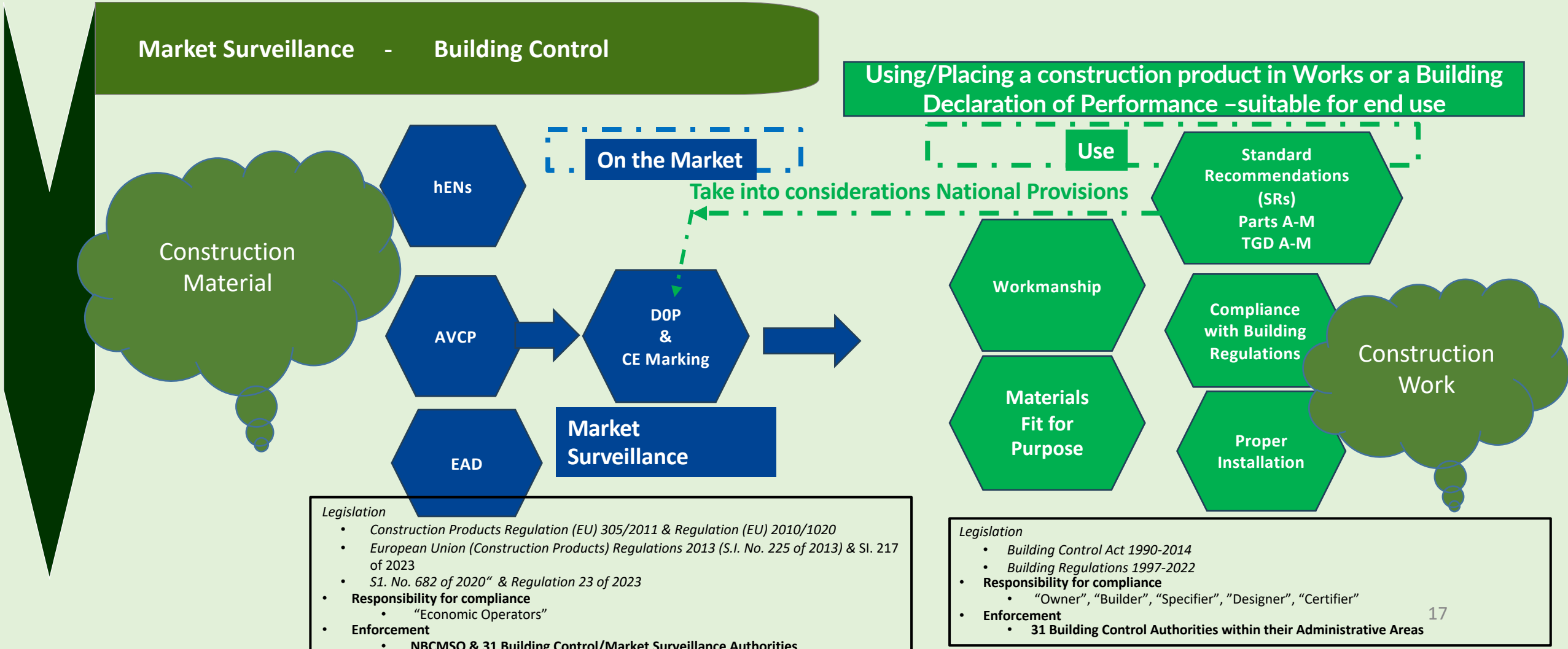


Fig 1 major entry routes



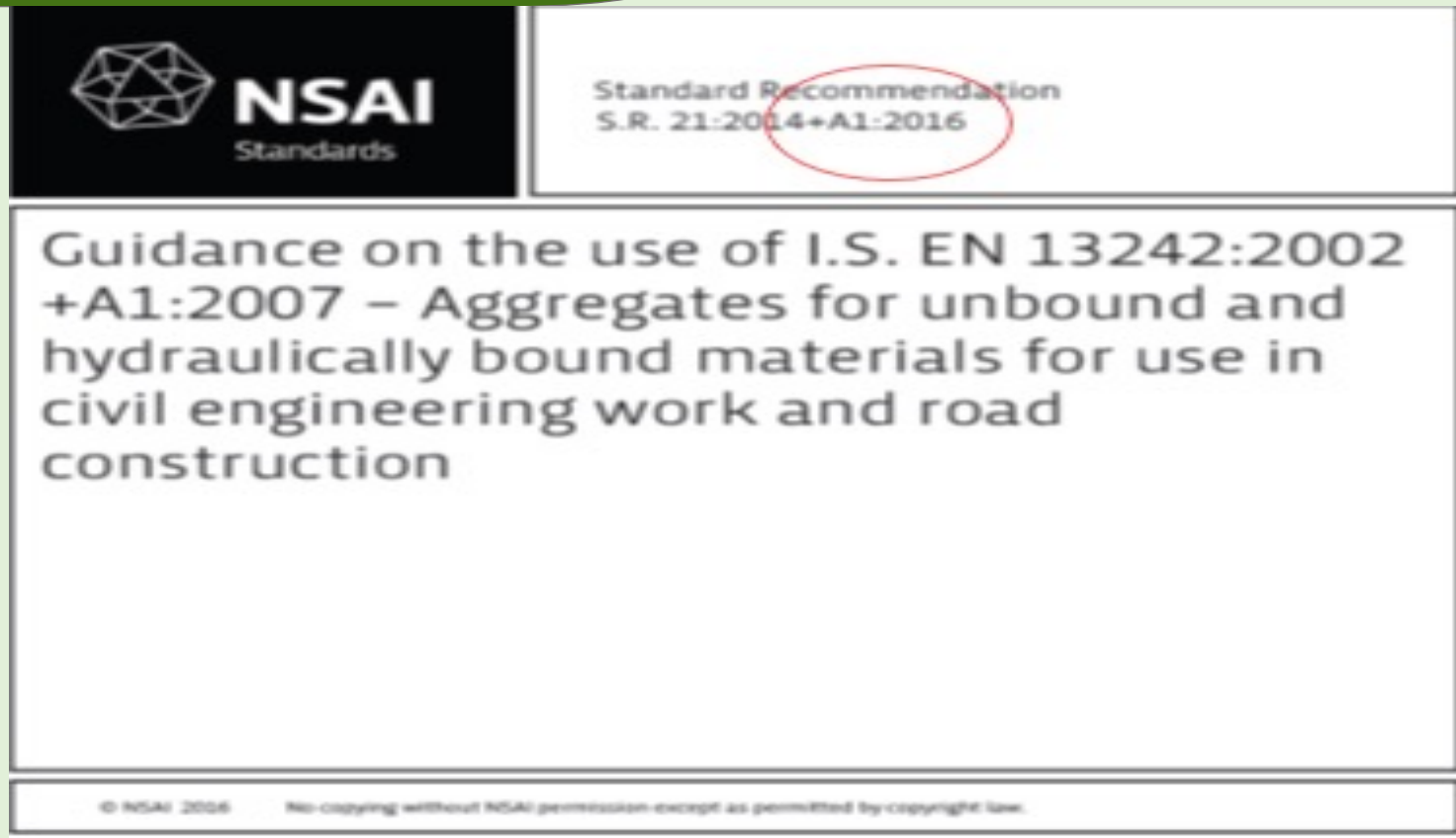
# National Building Control & National Market Surveillance Office



# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

- The amendment was necessary due to the grade size introduced in the 2014 version.
- Permeability of hardcore for radon extraction was questionable.



# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### Declaration of Performance
DOP/AN/78778

**0/4 (S.R. 21 ANNEX E – T3 BLIND)**
Annagor Quarry, Duleek, Co Meath

**1. Unique Identification code of the product - type:** Code 78778 - 0/4 (S.R. 21 ANNEX E – T3 BLIND)

**2. Intened use/es:** Hydraulically bound and unbound materials for use in civil engineering and road construction. Including unbound granular fill (Hardcore) for use under concrete floors and footpaths.

**3. Manfacturer:** Kilsaran Concrete, Piercetown, Dunboyne Co. Meath

**4. Authorised Representative:** N/A

**5. System of AVCP:** System 2+

**6a. Harmonised Standard:** I.S. EN 13242:2002+A1:2007 / S.R. 21:2014+A1:2016 **Notified Body:** NSAI (0050-CPR-0209)

**7. Declared performance/s:**

| Characteristic | Declared Performance | | Harmonised Technical Specification |
|---|---|---|---|
| **Particle size** | Designation | 0/4 Gf80 | EN 933-1 |
| **Particle shape** | Category | NPD | EN 933-3 |
| **Particle density** | Declared Value | 2.7 $Mg/m^3$ | EN 1097-6 |

CE

**0050**

Kilsaran Concrete
Piercetown, Dunboyne Co. Meath
16
0050-CPR-0209

**I.S. EN 13242:2002+A1:2007**
**Aggregates for hydraulically bound and unbound material for civil engineering and road construction**

**0/4 (S.R. 21 ANNEX E – T3 BLIND)**
Annagor Quarry, Duleek, Co Meath
AN/78778

DOP For Aggregates (Annex E Compliance)

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture


**3.1.4 (d)**

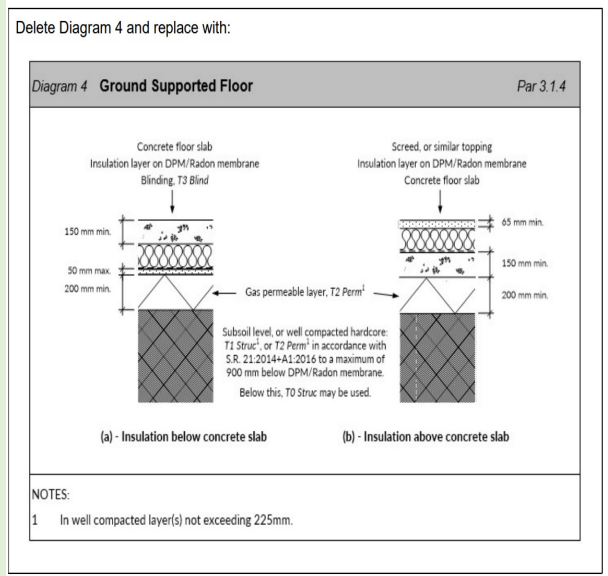
Hardcore should be placed as outlined in Diagram 4. Hardcore should be graded in accordance with S.R. 21:2014+A1:2016, as follows:

T0 Struc Suitably graded structural unbound granular fill (hardcore) material (0/125 mm), for use at depths greater than 900 mm below the radon barrier/Damp Proof Membrane (DPM).

T1 Struc Structural unbound granular fill (hardcore) material is an all in graded aggregate (0/32 mm) or gravel (0/40 mm) to facilitate placing and compactability.

T2 Perm Suitably graded unbound granular fill (hardcore) material (4/40 mm) to facilitate the free movement of gas within the hardcore layer.

T3 Blind Fine aggregate (0/4 mm, GF80), for blinding the top surface of the Annex E granular fill.



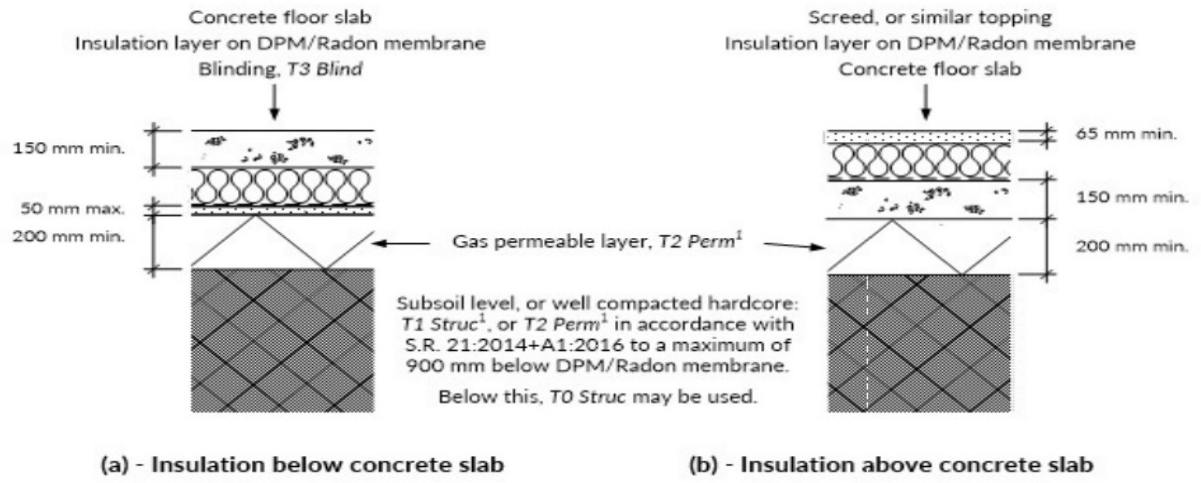
# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

- Concrete floor slab
- Insulation
- Radon membrane or DPM
- T3 Blind
- T2 Perm Gas permeable layer 200mm min.
- T1 Struc or T2 perm depending on loading and depth
- T1 Struc or
- T0 Struc

Delete Diagram 4 and replace with:

*Diagram 4* **Ground Supported Floor** *Par 3.1.4*




(a) - Insulation below concrete slab (b) - Insulation above concrete slab

NOTES:

1 In well compacted layer(s) not exceeding 225mm.

# National Building Control & National Market Surveilla

## TGD C– Site Preparation and Resistance to Moisture

Where a blinding layer is used (See Diagram 4a), it should be provided in accordance with the specification given in Annex E, of S.R. 21:2014 + A1:2016, for fines material. The blinding layer should be of adequate depth to fill surface voids thus creating an even surface and avoiding sharp projections, which may damage radon or damp-proof membranes.

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

**Part C**

**2.13 Particular care should be taken when installing the membrane.**
All joints and service penetrations must be fully sealed. In view of the difficulty of achieving gas-tight seals under site
conditions, it is recommended that the membrane be prefabricated and installed by appropriately trained personnel.

**2.14 Every precaution must be taken to protect the membrane**
from damage, pre- and post- installation and also during its lifetime including making appropriate allowances for differential settlement.

**2.15** Advice on design, location, and number of
**standby Radon sumps** along with design of associated pipework is contained in *"Radon in Existing Buildings – Corrective Options" (2002)*. A single sump is likely to have influence over an area of at least 250m2 and for a distance of at least 15m from the sump. The hardcore layer should be clean, dry, will-compacted and gas permeable following the compaction process.

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

- A fully sealed radon membrane of low permeability over the entire footprint of the building
- The membrane is the primary means of preventing ingress of radon and is required in High Radon Areas.
- A radon membrane must be fit for purpose as specified in TGD D.
- It must meet the specifications set out in TGD-C Table 3.
- It must have independent certification as a Radon membrane by an approved body e.g. NSAI Agrément.
- There is no harmonised standard applying to Radon membranes and so CE markings do not apply.
- It may have a CE mark as a DPM.

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

- A Radon membrane contributes significantly to reducing the overall Radon concentrations.
- **However, it is NO guarantee of a low radon level in the finished dwelling.**
- TGD-C recommends a post occupation test to determine if high radon levels exist.

# National Building Control & National Market Surveillance Office

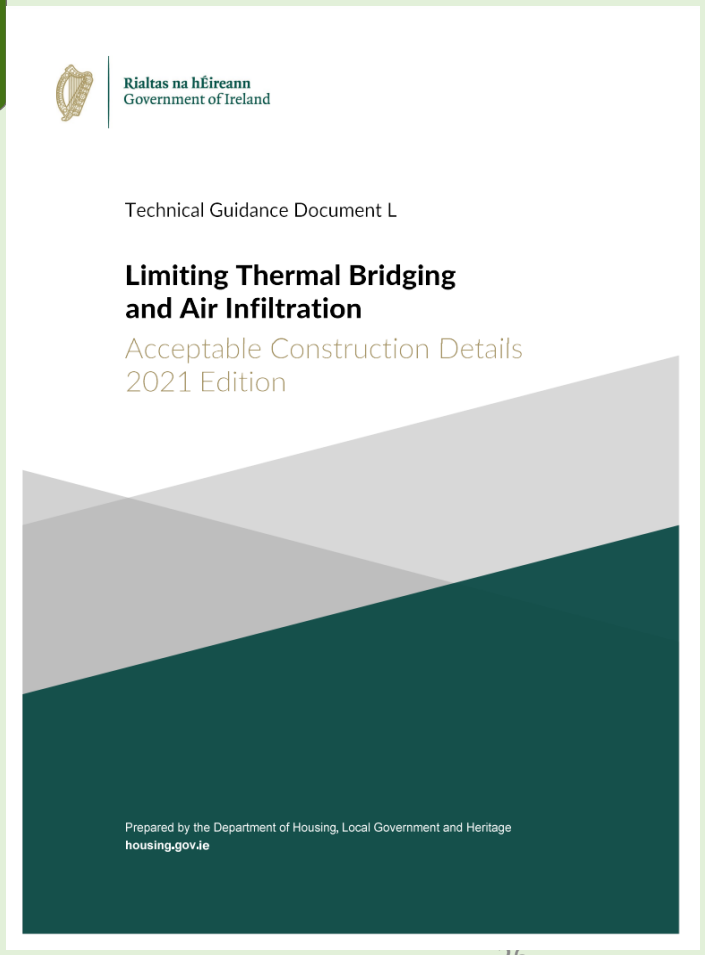
## Acceptable Construction Details (2021 ACD's)

These Acceptable Construction Details (ACDs) focus on thermal bridging and airtightness. This guide will help appropriate persons to achieve the performance standards in the Building Regulations Technical Guidance Document L 2021 – Conservation of Fuel and Energy – Dwellings.
The guide is presented in 2 Parts.

Part 1 discusses the general theory of insulation continuity and airtightness in construction.

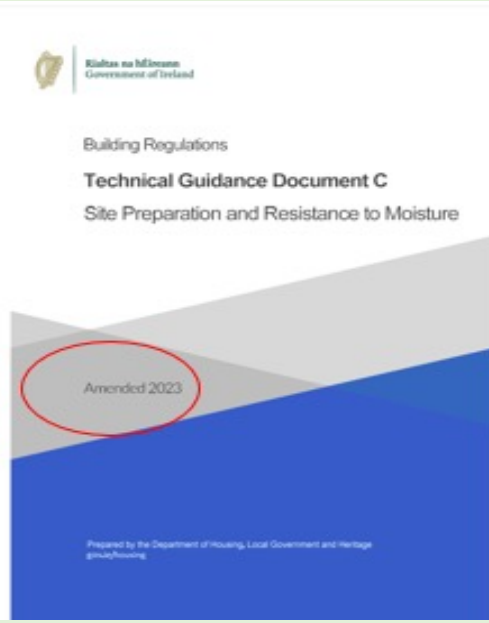
Part 2, in seven separate sections, provides indicative detail drawings of thermal insulation and airtightness provisions for specific construction interfaces.

General Details
Cavity Wall Insulation
External Wall Insulation
Internal Wall Insulation
Timber Frame Insulation
Steel Frame Insulation
Cavity Block Insulation



# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture



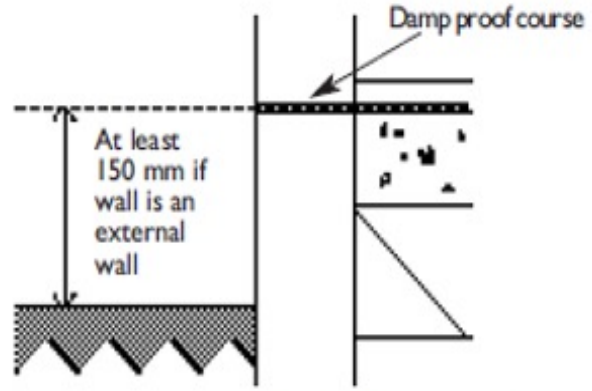

- ***C4 Resistance to Weather & Ground Moisture-*** *The floors, walls and roof of a building shall be so designed and constructed as to prevent the passage of moisture to the inside of the building or damage to the fabric of the building*
- *"**floor**" includes any base or structure between the surface 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;*
- *"**moisture**" includes water vapour and liquid water;*
- Section 3 addresses moisture ingress.

# National Building Control & National Market Surveillance Office

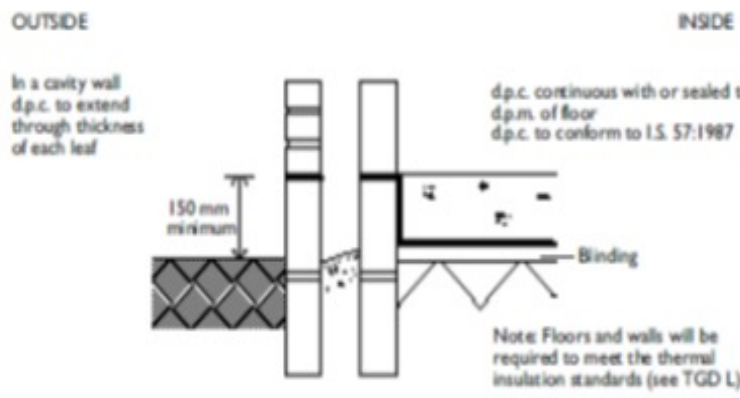
## TGD C– Site Preparation and Resistance to Moisture

### Walls should have a damp-proof course

- The damp-proof course should be continuous with the damp-proof membrane in the floors.
- 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 .
- 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.



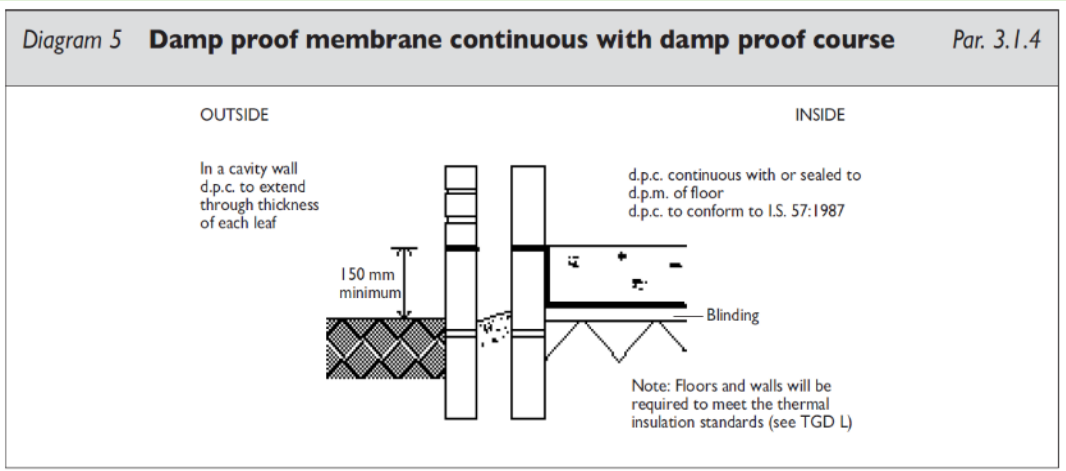

The wall damp proof course should be continous with the floor damp proof membrane



# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

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).




# National Building Control & National Market Surveillance Office

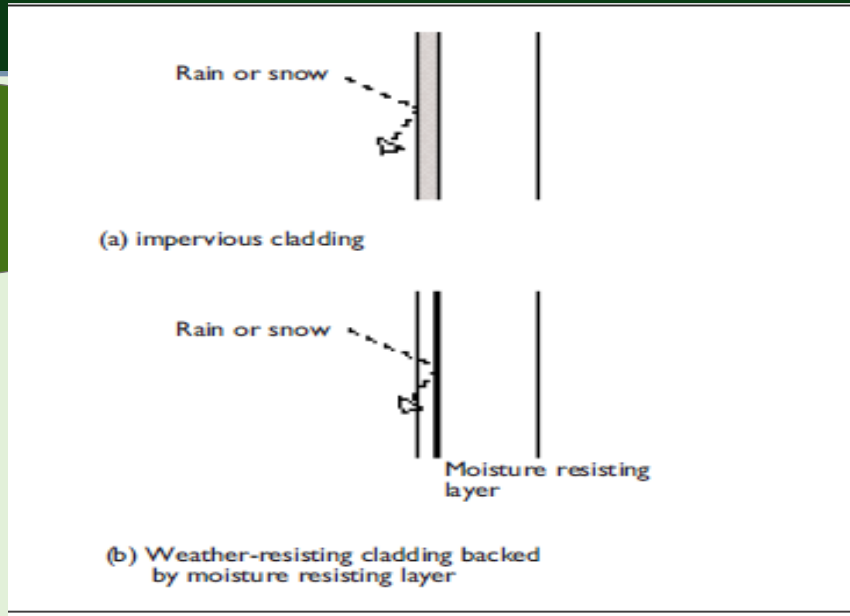
## TGD C– Site Preparation and Resistance to Moisture

### Cladding (including Slating and Tiling) for External Walls and Roofs

- **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.

**Cladding –jointless/sealed joints/impervious**

**Each sheet,** tile and section of cladding should be **securely fixed** as prescribed in the appropriate standard or code




# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

- An external cavity wall may be constructed of two leaves with the outer leaf separated from the inner leaf by a drained air space
- An external cavity wall may be built as follows:
  - (a)outer leaf of 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 of masonry or frame with lining.
- An insulating material may be placed in the cavity between an outer leaf and inner leaf of masonry construction provided that -
- (a)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
- (b)where the cavity is to be partially filled with insulating material, the residual cavity should be not less than 40 mm wide.

# National Building Control & National Market Surveillance Office

TGD A – Part A Structures

## S.R. 325 STANDARD RECOMMENDATIONS FOR THE DESIGN OF MASONRY STRUCTURES IN IRELAND TO EUROCODE 6

## S.R. 325:2013+A2:2018/AC:2019


Walls should be properly bonded and solidly put together with mortar and comply with the relevant requirements of I.S. EN 1996 and additional guidance given in S.R. 325

**Aggregate Concrete Masonry Units within the scope of EN 771-3 must have a Declaration of Performance and CE marking since 1 July 2013 in order to comply with the Construction Products Regulation.**

**Current Addition**

**S.R. 325:2013+A2:2018/AC:2019 RECOMMENDATIONS FOR THE DESIGN OF MASONRY STRUCTURES IN IRELAND TO EUROCODE 6**

- Masonry –"*assemblage of units jointed with mortar*"
- Masonry Unit -"*brick or a block*"
- Masonry Bond "*disposition of units in masonry*"

NSAI Standards

Replaces S.R. 325:2013+A1:2014 23/05/2014 withdrawn 31/07/2018
Corrected by S.R. 325:2013+A2:2018/AC:2019 25/02/2019

Main + Amendment
S.R. 325:2013+A2:2018

# National Building Control & National Market Surveillance Office

## DoP's

**DECLARATION OF PERFORMANCE No.** 12345

1. **Unique identification code of the product type:** ABC – 7.5N Solid Block
2. **Intended Use:** Common masonry unit for use as external walls, or as internal walls, in load bearing or non-load bearing building and civil engineering applications.
3. **Manufacturer:** ABC Concrete Ltd., Address 1, Address 2, Ireland. Eircode: XXXX
4. **Authorised Representative:** Not Applicable
5. **System of AVCP:** AVCP System 2+
6. **Harmonised Standard** EN 771-3:2011+A1:2015
7. **Notified Body:** NB 99999
8. **Declared Performance:**

| Essential Characteristic | | Performance | |
|---|---|---|---|
| Dimensions | Length | 440 mm | Declare a performance value of each essential characteristic for the specific product to which the DoP relates. |
| | Width | 100 mm | Declare a performance value of the essential characteristic for the specific product, taking into consideration the minimum performance value specified in national provisions, for certain applications. Annex C.2 of S.R. 325:2013+A2:2018 |
| | Height | 215 mm | |
| | Tolerance Category | D1 (+3mm, -5mm) | Annex C.3 of S.R. 325:2013+A2:2018 |
| Configuration | Shape and features | | To be defined by the manufacturer |
| | Grouping according to EN 1996-1-1 | Group 1 | Annex C.5 of S.R. 325:2013+A2:2018 |
| Compressive Strength | Mean Compressive Strength | 7.5 N/mm² | Annex C.4 and C.5 of S.R.325:2013+A2:2018, and Technical Guidance Document A (Structure) |
| | Direction of load | Perpendicular to bed faces | Annex C.4 of S.R. 325:2013+A2:2018 |
| | Unit Category | Category I | Table 14 of S.R. 325:2013+A2:2018 |
| Dimensional Stability Moisture Movement | | < 0.6 mm/m | Annex C.6 of S.R. 325:2013+A2:2018 & Table NA.6 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012 |
| Bond Strength | Shear Bond Strength | 0.15 N/mm² | Table NA.5 of NA:2010+A1:2014 to I.S. EN 1996-1-1:2005+A1:2012 |
| | Flexural Bond Strength | 0.5 N/mm² | |
| Reaction to Fire | | A1 | Technical Guidance Document B - Fire Safety |
| Water Absorption | | ≤20 g/m²s | To be declared by the manufacturer. Section 5.5 of S.R. 325 provides guidance |
| Water Vapour Permeability | | 5/15μ (Tabulated value) | |
| Direct Airborne Sound Insulation - Gross Density | | >1900 kg/m³ | Technical Guidance Document E - Sound |
| Thermal Resistance | | 1.11 W/mK (λ10, dry) | Technical Guidance Document L – Conservation of Fuel and Energy |
| Durability against freeze thaw | | Suitable for use in: **Masonry Condition Situations A1 and A2** as outlined in Table 14 of S.R. 325:2013+A2:2018. (Work below or near external ground level) – MX2.1/2.2 • net density ≥ 1,500 kg/m³, • mean compressive strength ≥ 7.5 N/mm² • aggregate in accordance with I.S. EN 12620 and S.R. 16:2016 • Mortar Strength Class: M4 for A1 or M6 for A2 | Table 14 of S.R 325:2013+A2:2018 outlines the range of masonry condition situations, for example: **Masonry Condition Situation C1 and C2** (Unrendered external walls) – MX3.1/3.2 • net density ≥ 1,500 kg/m³, • mean compressive strength ≥ 13N/mm² • aggregate in accordance with I.S. EN 12620 and S.R. 16:2016 • Mortar Strength Class: M12 for C1 and C2 |
| Dangerous Substances | | NPD | No Performance Determined |

The performance of the product identified above is in conformity with the declared performance/s. This declaration of performance is issued in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Insert as per Regulation (EU) No 574/2014

**Signed for and on behalf of the manufacturer by:** A.N. Other

Insert Name

**At:** Address 1, Address 2, Ireland, Eircode XXXX **on** 01 July 2013

Insert address and date of issue

**Signature:** *A.N. Other*

Insert signature

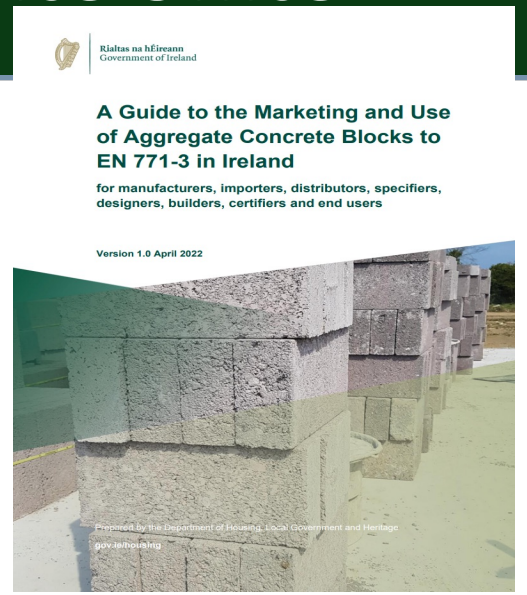
www.ABCConcrete/DoP12345

Link to online copy of DoP (if hosted online) See Delegated Regulation (EU) No 157/2014

SAMPLE

11

**NOTE 2:** Where National Provisions do not exist for certain essential characteristics or where some essential characteristics are not relevant to the intended use of the product, the manufacturer may decide not to declare a specific performance. In both these cases "no performance determined" using the acronym "NPD" may be inserted in the Declaration of Performance.




| | |
|---|---|
| **Durability against freeze thaw** | Suitable for use in: **Masonry Condition Situations A1 and A2** as outlined in Table 14 of S.R. 325:2013+A2:2018. (Work below or near external ground level) – MX2.1/2.2 • net density ≥ 1,500 kg/m³, • mean compressive strength ≥ 7.5 N/mm² • aggregate in accordance with I.S. EN 12620 and S.R. 16:2016 • Mortar Strength Class: M4 for A1 or M6 for A2 |
| **Dangerous Substances** | NPD |

Table 14 of S.R 325:2013+A2:2018 outlines the range of masonry condition situations, for example:
**Masonry Condition Situation C1 and C2**
(Unrendered external walls) – MX3.1/3.2
- net density ≥ 1,500 kg/m³,
- mean compressive strength ≥ 13N/mm²
- aggregate in accordance with I.S. EN 12620 and S.R. 16:2016
- Mortar Strength Class: M12 for C1 and C2

No Performance Determined

# National Building Control & National Market Surveillance Office

## Construction Products – Building Regulations/ National Provisions!!!!

**Sample Declaration of Performance and CE Marking**

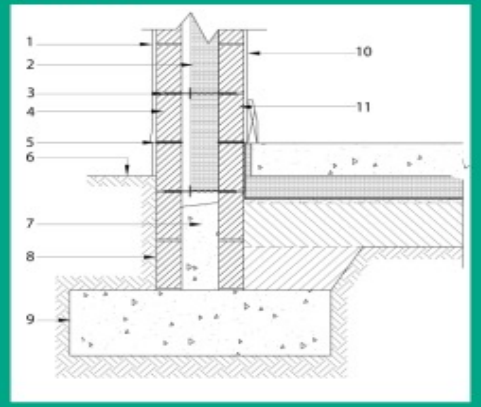
A sample Declaration of Performance (in accordance with Commission Delegated Regulation (EU) No 574/2014) and CE Marking are provided on the following page to illustrate the minimum information to be provided for a common masonry unit to EN 71-3:2011+A1:2015, having regard to the national provisions that exist in Ireland e.g. S.R. 325 and Technical Guidance Documents.

Adherence to this sample Declaration of Performance will facilitate clearer communication of the performance characteristics of the aggregate concrete block. This will help inform specifiers, designers, builders, certifiers and end users when choosing aggregate concrete blocks that are fit for the use intended and the suitable for the conditions in which they are to be used to ensure compliance with the Building Regulations 1997 to 2021.


**Typical Cavity Wall Construction**

The walls should be properly bonded and solidly put together in a workmanlike manner, using proper materials *'fit for the use intended and the suitable for the conditions in which they are to be used'* (Part D Materials and Workmanship), and comply with the relevant provisions of:

- Part A/TGD A (Structure), including provisions of I.S. EN 1996-2 and S.R. 325 e.g. external render, durability, movement joints, etc
- Part C/TGD C (Site Preparation and Resistance to Moisture), to prevent the passage of moisture to the inside of the building or damage to the fabric of the building.




**Legend**

1. External Render – Refer to S.R. 325 (including Annex E and F)
2. Insulation – Refer to S.R. 325 and Acceptable Construction Details
3. Wall ties – Refer to S.R. 325 (including Annex D)
4. Aggregate concrete block external leaf – Refer to S.R. 325 (including Annex C for aggregate concrete blocks and Annex E for masonry mortar)
5. Damp Proof Course – Refer to TGD C (Site Preparation and Resistance to Moisture) and S.R. 325.
6. External Ground Level
7. Cavity filled with concrete
8. Rising wall
9. Foundation – Refer to TGD A (Structure)
10. Internal plastered finish – Refer to EN 13914-2
11. Aggregate concrete block inner leaf – per Note 4

Rialtas na hÉireann
Government of Ireland

**A Guide to the Marketing and Use of Aggregate Concrete Blocks to EN 771-3 in Ireland**

**for manufacturers, importers, distributors, specifiers, designers, builders, certifiers and end users**

Version 1.0 April 2022

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

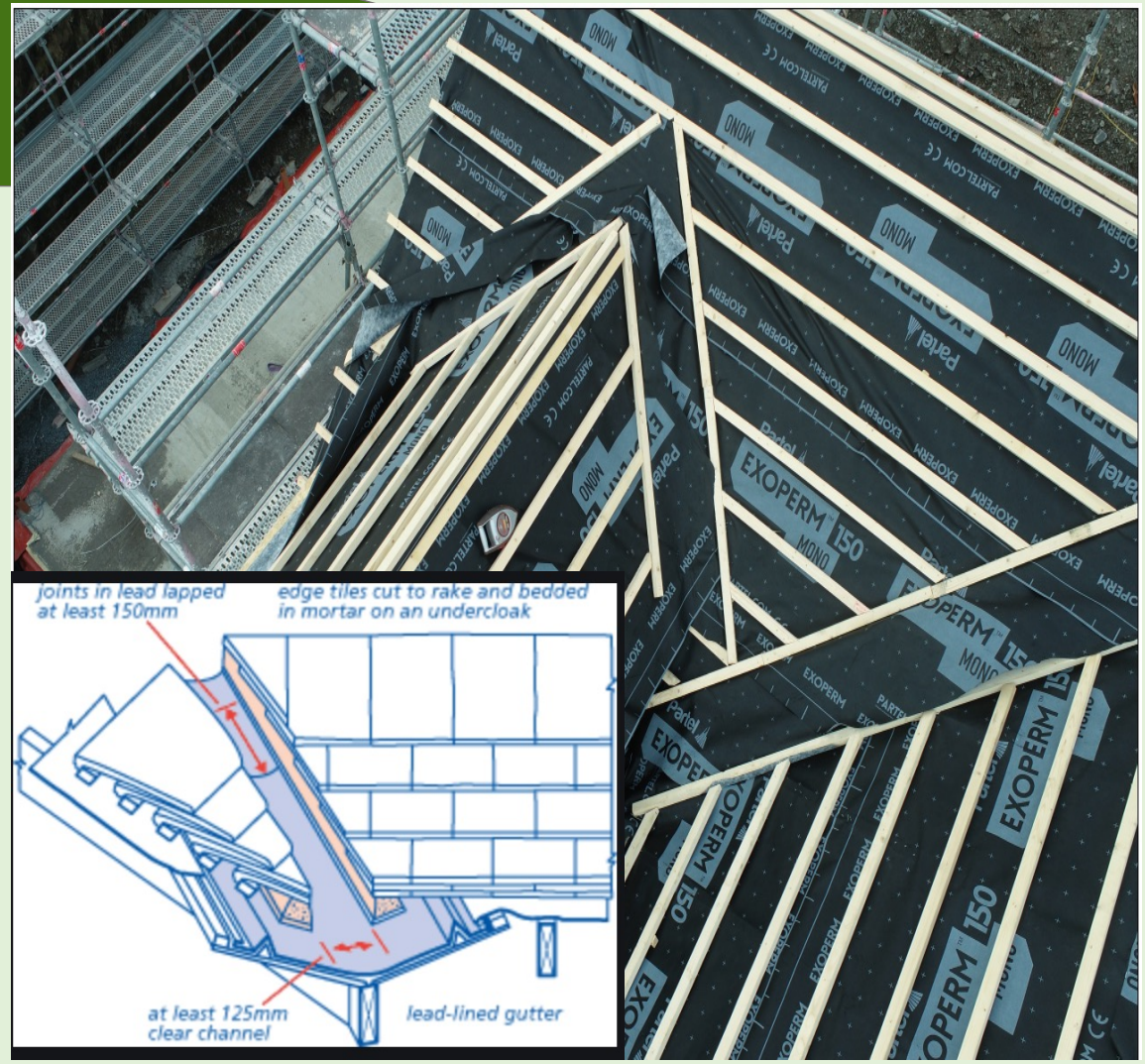
NSAI Standards

Standard Recommendation
S.R. 82:2017

### Slating and Tiling - Code of Practice

**S.R. 82:2017 gives guidelines for the materials, design and application recommendations, and workmanship requirements for slates, tiles, and their associated fittings and accessories, used in the construction of pitched roofs and vertical cladding applications of ridge height not exceeding 10 storeys above adjoining ground level**





# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### 5 Design recommendations

#### 5.1 General considerations

The criteria taken into account when designing and/or selecting products for the roof construction should include but not be limited to:

— structural stability;

— weathertightness;

— ventilation;

— shape and size of roof;

— durability;

— control of condensation, thermal performance and hygrothermal factors; and

— health and safety considering fire, sound, and impact resistance.

NOTE 1 Buildings near sources of noise can require the acoustic properties of the roof to be addressed at the design stage.

S.R. 82:2017


Figure 1 - Map showing moderate and severe exposure zones in the Republic of Ireland

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### 5.2.2 Assessment of exposure to local wind-driven rain and wind

#### 5.2.2.1 General

Figure 1 shows a map of the Republic Ireland divided into two zones based on exposure to local wind-driven rain and wind. The two zones are moderate and severe. Figure 1 is based on driving rain data from the S Walsh (2010). This map may be used when designing buildings up to 12 m ridge height above adjoining ground level.

#### 5.2.2.2 Moderate exposure zone

Moderate exposure to wind-driven rain applies in districts where the driving rain index is less than 5 $m^2$/sec/year and wind speeds of less than 26 m/s. These are shown in Figure 1.

In districts of moderate exposure, buildings which stand above their surroundings, or buildings of any height on hill slopes or hill tops, should be regarded as having a severe exposure.

#### 5.2.2.3 Severe exposure zone

Severe exposure to wind-driven rain always applies in districts where the driving rain index is equal to or greater than 5 $m^2$/sec/year and wind speeds greater than 26 m/s. These are shown in Figure 1.

S.R. 82:2017


Figure 1 - Map showing moderate and severe exposure zones in the Republic of Ireland

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### 4 Materials, fittings, and accessories

#### 4.1 General

Irish or European standards may not exist for some of the products referred to in this Code of Practice. Where this is the case, reference should be made to the Technical Guidance Document D, Materials and Workmanship, for guidance on acceptable methods of proving fitness for purpose of materials intended for use in the roof construction.

The Declaration of Performance (DoP) certificate issued for the construction products should be checked to ensure that they meet the design specification. Roofs are generally considered to be in Service Class 2 as defined in I.S. EN 1995-1-1 and materials should be selected accordingly. The selection of the roof finish can impact on the vapour permeability of the roof as a system therefore, this consideration should reflect the total present and future roof system design for insulation and condensation risk.

#### 4.8 Roofing underlay

##### 4.8.1 General

The roofing underlay should be of adequate strength, water resistance and durability for the proposed application. Requirements of roofing underlays are detailed in 5.6.1.

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### 5.6 Roofing underlay

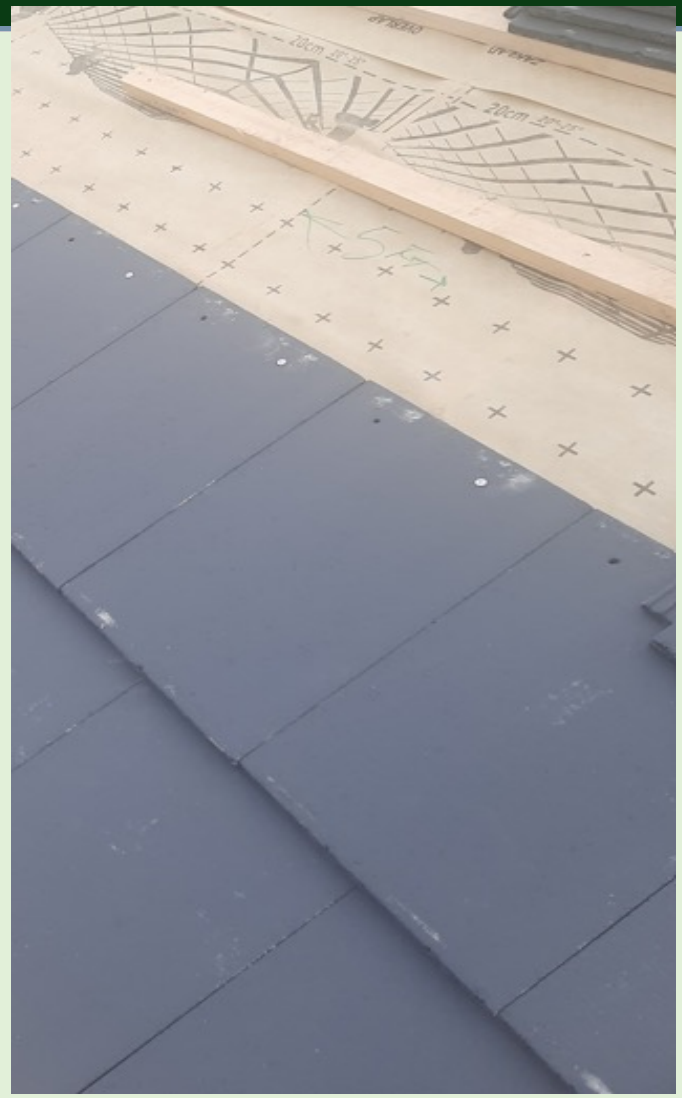
#### 5.6.1 General

The roofing underlay provides a barrier to minimise the wind load generated under wind gusts acting on slates and tiles. It also provides a barrier to prevent wind-driven rain, snow, and dust from entering the roof space and transports any rainwater, which could penetrate the joints of the slating or tiling, into the roof drainage system.

Underlays should have adequate resistance and stiffness against wind uplift loads. The upward deflection of a flexible underlay under maximum wind uplift load, with battens at the maximum design gauge, should be such as to avoid contact with the underside of the slates or tiles, to prevent the wind uplift load being transmitted to the slates or tiles.

The durability of the roofing underlay should be compatible with the expected life span of the slating or tiling. The minimum grade of underlay that may be used is Type 1F, although this type of underlay may not be used in the vicinity of the eaves without additional protection from a more durable material. A superior bitumen-based underlay is Type 5U. Enhanced levels of protection may be provided by other proprietary roofing underlays (see 4.1 and 4.8). Where the length of the roof slope, measured by horizontal projection, exceeds 6 m (see Figure 2) careful consideration should be given to the selection of the underlay, particularly where it is not fully supported.

Bituminous and some non-bituminous underlays should not be used in combination. Some wood preservative treatments, applied to timber that is used in conjunction with some proprietary roofing underlays, can be harmful to the underlay. In case of doubt, advice should be obtained from the underlay manufacturer or the preservative manufacturer.



# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### 5.6.2 Underlay overlaps

Sidelaps should be located over a rafter and should be greater than or equal to 100 mm. Table 7 can be used to obtain the recommended minimum headlap for different roof pitches and conditions of use.

**Table 7 - Minimum headlaps for roofing underlay**

| Pitch (Degrees) | Minimum headlaps for not fully supported underlay (mm) | Minimum headlaps for fully supported underlay (mm) |
|---|---|---|
| ≥ 35° | 100 | 75 |
| ≥ 22,5° and < 35° | 150 | 100 |
| < 22,5° | 225 | 150 |

# National Building Control & National Market Surveillance Office

## TGD C– Site Preparation and Resistance to Moisture

### 4.7 Valley gutter units (preformed)

Proprietary valley gutter units, which include preformed Glass-reinforced plastic (GRP), PVC-U and metal products, etc., should be of adequate strength, water impermeability, durability and geometric dimensions.

Proprietary valley gutter units as fitted should not adversely affect the performance of the roof as laid.

NOTE Evidence that products have been shown to be satisfactory in the location of intended use; or evidence from an appropriate test method which can be directly correlated with the recommended conditions of use.

**Thermal Expansion, fixings and flexibility –highly exposes**

# National Building Control & National Market Surveillance Office

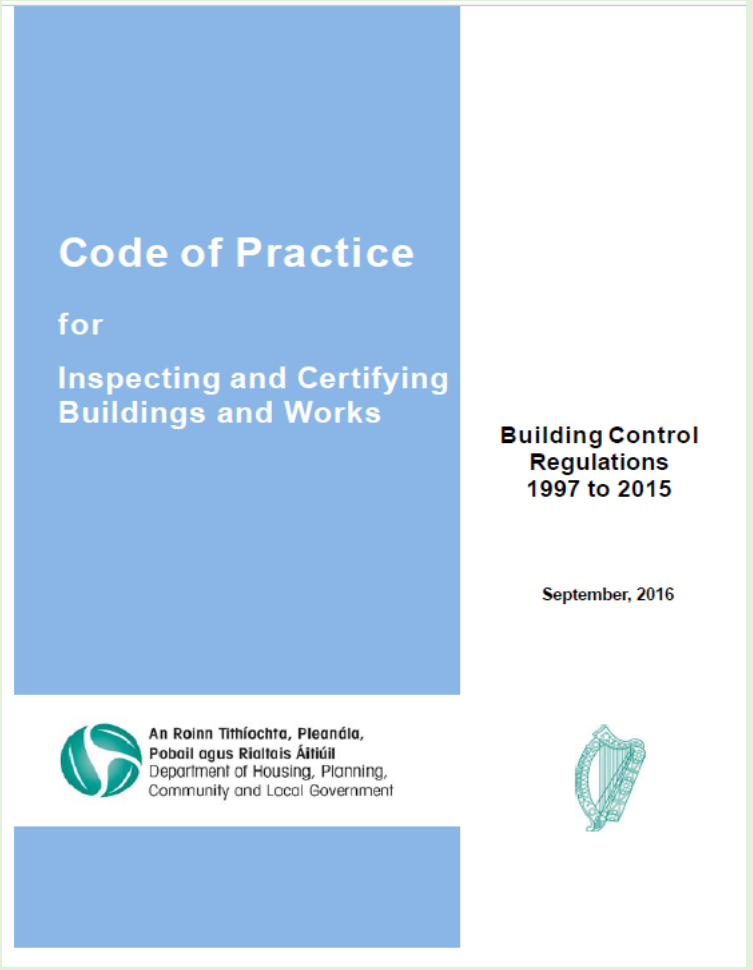
## Code Of Practice for Inspecting and Certifying Buildings and Works

**“Competent Person”:**

A person is deemed to be a competent person where, having regard to the task he or she is required to perform and taking account of the size and/or complexity of the building or works, the person possesses sufficient training, experience and knowledge appropriate to the nature of the work to be undertaken.

**"Design"**

Has the meaning assigned to it in the Act of 1990 and includes the preparation of plans, particulars, drawings, specifications, calculations and other expressions of purpose according to which the Construction, extension, alteration, repair or renewal concerned is to be executed and "designed" will be construed accordingly;



# National Building Control & National Market Surveillance Office

## Code Of Practice for Inspecting and Certifying Buildings and Works

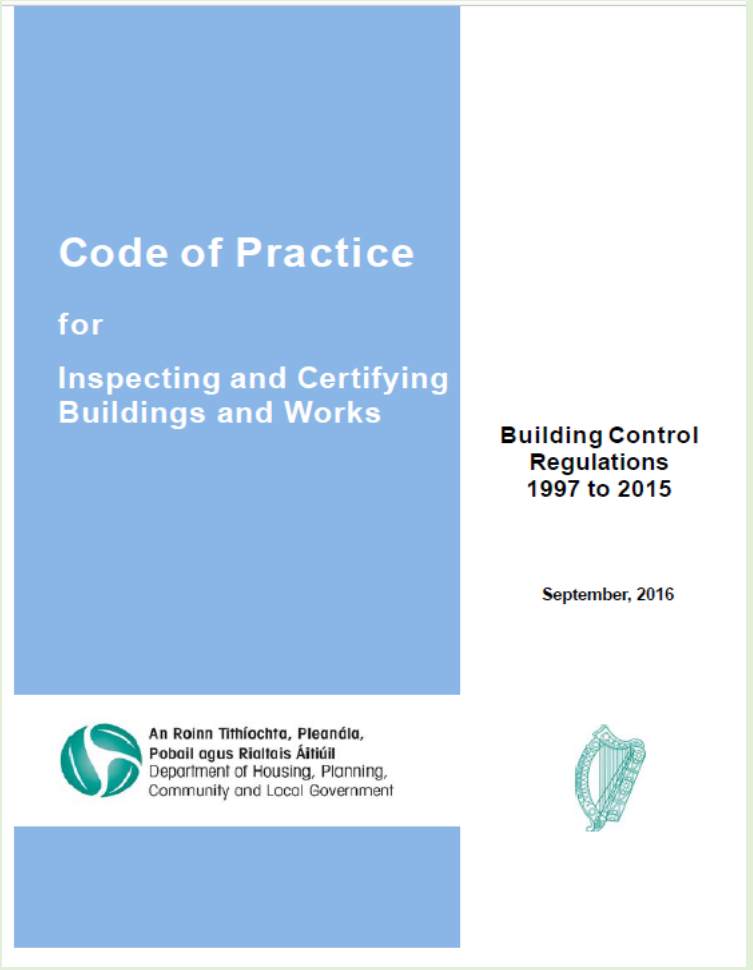
**“Inspection Notification Framework”** or “INF” has the meaning set down in section 7.3 of this Code of Practice;

The Assigned Certifier should, as part of **the Inspection plan** and before the commencement of work on site**, agree** with the **Building Owner and Builder** an INF, taking account of the building works involved and other factors. The INF should identify generally the stages or items of work the **individual certifiers** wish **to be notified of**, as and when they are **ready for inspection**.

The Assigned Certifier should make available an Inspection Plan including the Inspection Notification Framework (INF), taking account of the complexity of the project and other factors. **The INF should identify** generally the stages or items of work which the Assigned Certifier wishes to be notified to him/her and nominated Ancillary Certifiers when such stages or items are ready for inspection.

**“Inspection Plan”** has the meaning set down in section 7.1 of this Code of Practice; **"Design"**

The **Assigned Certifier** and other persons nominated to undertake necessary inspections should adopt an appropriate Inspection Plan which takes full account of relevant factors for the building work concerned. Relevant factors should be assessed **at the outset** and **regularly reviewed** so that **effective control** is maintained for the **duration of each project**, with **adequate site inspections** and **records sufficient to demonstrate** the application of **reasonable skill, care and diligence**.



# National Building Control & National Market Surveillance Office

**Remember what you are signing as a Designer!!!!!**

3. I confirm that I have been commissioned by the building owner **to design, in conjunction with others**, the building or works described above **and to certify such design**. I further confirm that I am a person **named on a register** maintained pursuant to Part 3 or Part 5 of the Building Control Act 2007 or Section 7 of the Institution of Civil Engineers of Ireland (Charter Amendment) Act 1969 and that **I am competent** to **carry out my design and to coordinate the design of others** for the building or works concerned.
4. I confirm that the plans, calculations, specifications, ancillary certificates and particulars included in the schedule to the 7 Day Notice to which this certificate is relevant, and which **have been prepared exercising reasonable skill, care and diligence by me, and by other members of the design team and specialist designers whose design activities I have coordinated, have been prepared to demonstrate compliance with the requirements of the Second Schedule to the Building Regulations** insofar as they apply to the building or works concerned.

northern & western region
eastern & midlands region
southern region

INSPECTIONS EDUCATION TRAINING MARKET SURVEILLANCE COMPLIANCE SUPPORT IS-BCMS

*An Oifig Náisiúnta um Rialú Foirgníochta*
NATIONAL BUILDING CONTROL OFFICE

- Education & Training
- Compliance Support
- Inspections
- BCMS
- Market Surveillance

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SUSTAINABLE DEVELOPMENT GOALS

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