



# IBCI Building Control Conference 2023



**Radisson Blu Hotel, Athlone,  
Co. Westmeath  
29th March 2023**



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Building Control & Technical Manager  
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# Preview

## Topic

Defination of Defect

Building Regulations / Technical Guidance Documents

Parties - Building Control (Amendment) Regulations 2014

Designer Duties

Recurring Design Issues A-M

Design Risks

# Assigned Certifier Perspective – Common Defects

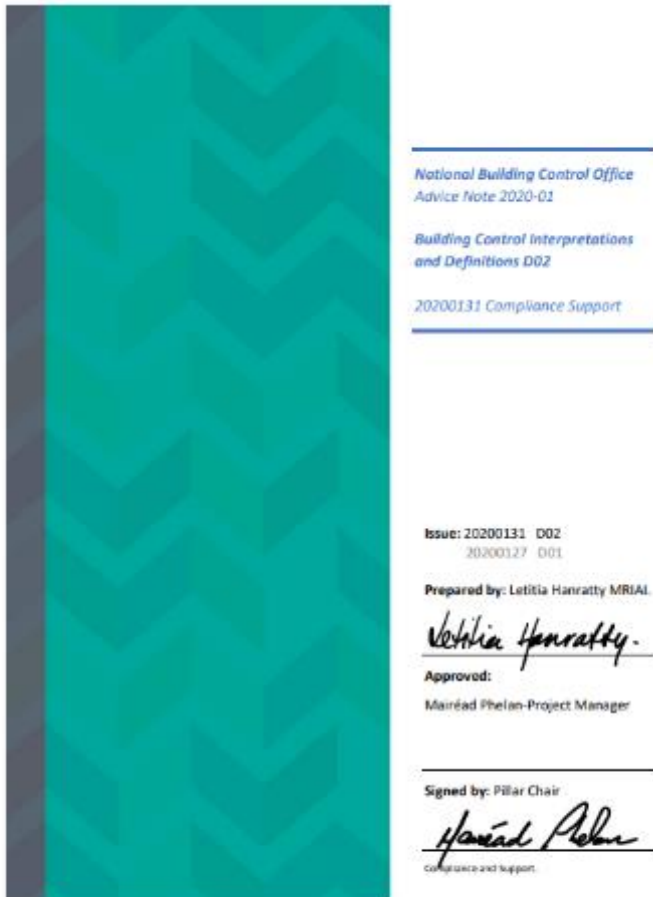


## BRE Digest 268

### Defect

“A defect is a shortfall in performance occurring at any time in the life of the product, element or building in which it occurs”

- Does not come up to the expectations of the client;
- Falls below the prescribed standards for things of its kind;
- Is less acceptable than it ought to be or
- Is the result of an error



# Building Regulations-How Many?



Ref.	Description	Applies to Project	Element	Design Certificate	Design Responsibility (Enter Company)
		YNHP		YNHPa	
	Leading				
	Ground movement				
	Disproportionate Collapse				
	Part B - Fire Safety				
Apt	Means of Escape				
Apt	Internal Fire Spread - Structure				
Apt	Internal Fire Spread - Linings				
Apt	External Fire Spread				
Apt	Access and Facilities for the fire service				
Ha	Means of warning and escape in case of fire.				
Ha	Internal fire spread (linings).				
Ha	Internal fire spread (structure).				
Ha	External fire spread				
0Ha	Access and facilities for the fire service.				
1Ha	Definitions for this Part.				
	Part C - Site Preparation & Resistance to Moisture				
	Preparation of Site				
	Subsoil Drainage				
	Dangerous Substances				
	Resistance to weather and ground moisture				
	Part D - Materials and Workmanship				
	Materials and Workmanship				
	Part E - Sound				
	Airborne Sound (walls)				
	Airborne Sound (floors)				
	Impact Sound (floors)				
	Part F - Ventilation				
	Means of Ventilation				
	Condensation in Roofs				
	Part G - Hygiene				
	Bathrooms and Kitchens				
	Sanitary Conveniences and Washing Facilities				
	Part H - Drainage and Waste Disposal				
	Drainage System				
	Septic Tank				
	Part J - Heat Producing Appliances 2014				
	Air Supply				
	Discharge of products of Combustion				
	Protection of Building				
	Provision of Information				
	Fuel Storage System				
	Liquid fuel storage				
	Part K - Stairways, Ladders, Ramps and Guards				
	Stairways, Ladders and Ramps				
	Protection from Falling				
	Vehicle Ramp				
	Part L - Conservation of Fuel and Energy - Duelling				
	Conservation of Fuel and Energy				
	Conservation of Fuel and Energy in Existing Duelling				
A					
	BOD				
	Energy performance of buildings requirements as set out in the European Union (Energy Performance of Buildings) Regulations 2019				
33					
35					
37	Major Renovation				
38	Nearly Zero Energy Performance				
	Part M - Access and Use				
	Access and Use of Building				
	Sanitary Conveniences				
	Audience or Spectator Facilities				

12 TGD's – 49 No Building Regulations

Part D of the Second Schedule to the Building Regulations 1997 to 2013 provides as follows:

<b>Materials and workmanship</b>	D1	All works to which these Regulations apply shall be carried out with proper materials and in a workmanlike manner.
<b>Letterplates</b>	D2	A letter plate aperture shall be so positioned at a reasonable height above ground level so as not to endanger the health and safety of persons using such apertures.
<b>Definition for this Part</b>	D3	In this Part, "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: <ul style="list-style-type: none"> <li>(a) bear a CE Marking in accordance with the provisions of the Construction Products Regulation;</li> <li>(b) comply with an appropriate harmonised standard or European Technical Assessment in accordance with the provisions of the Construction Products Regulation; or</li> <li>(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.</li> </ul> <p>"Agreement on the European Economic Area" means the Agreement on the European Economic Area between the European Union, its Member States and the Republic of Iceland, the Principality of Liechtenstein and the Kingdom of Norway as published in the Official Journal of the European Communities (O.J. No. L1, 03.01.1994, page 3).</p> <p>"Construction Products Regulation" means Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.</p>

# Building Control (Amendment) Regulations 2014 – BCMS – Registration



**Building  
Owner**



**Builder**



**Assigned  
Certifier**



**Design  
Certifier**

# Building Control (Amendment) Regulations 2014 – Duties



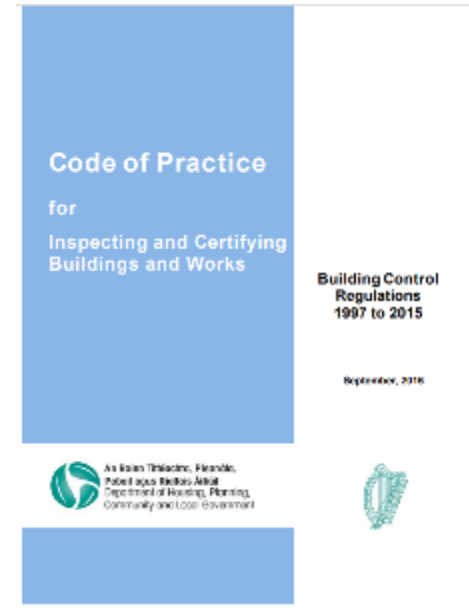
**Assigned  
Certifier**

“Assigned Certifier” means the competent, registered professional person assigned by the Building Owner to inspect and certify works in accordance with the Building Control Regulations;



**Design  
Certifier**

“Design Certifier” means the competent, registered professional person:



# Definition of “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

# Designer's Duties



- (a) design their respective elements of work in accordance with the applicable requirements of the Second Schedule to the Building Regulations- Appendix A
- (b) provide the Design Certifier with the necessary plans, specifications and documentation that is required for lodgement at commencement stage;
- (c) arrange to provide sufficient information to the Assigned Certifier to enable them to fulfil their role;
- (d) as agreed with the Assigned Certifier, carry out work inspections which are pertinent to their elements of the Design, and liaise with the Assigned Certifier in terms of this and the required ancillary certification;



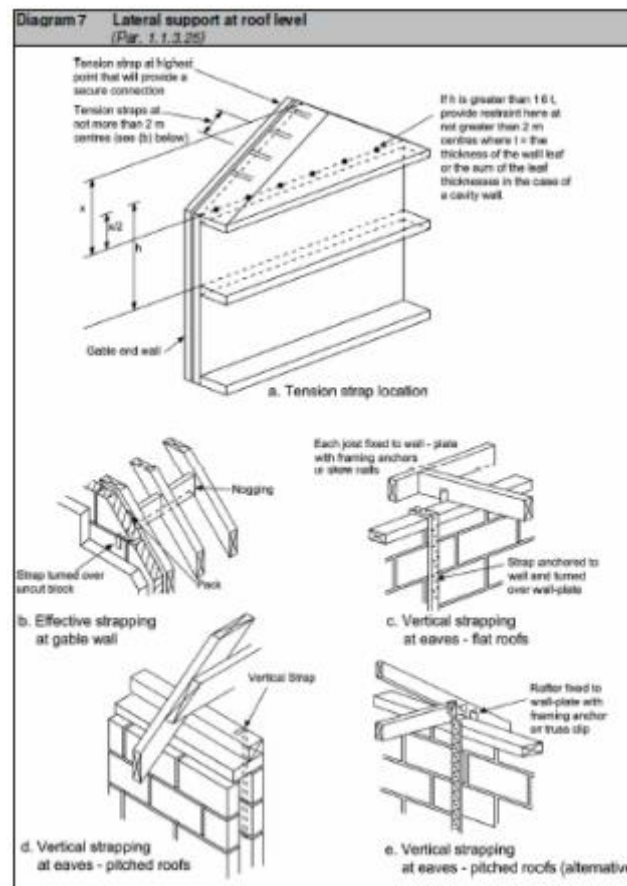


# Designer's Duties

- (e) notify the Assigned Certifier of their proposed inspection regime for inclusion in the overall Inspection Plan;
- (f) provide the Ancillary Certificates when required by the Assigned Certifier and Design Certifier; and
- (g) maintain records of inspection

# Recurring Design Issues - A

## Roof Truss — no straps bottom cord



- TGD A
- SR325

## Recurring Design Issues - B

# Material Performance – Plasterboard



- IS440
- Fire Test



Flatstrap installed at horizontal board joints.



Photo 7



Photo 8



Photo 9

- SFS external Walls

If fire test performance can not be verified,  
then replace

# Recurring Design Issues - C

## External Wall — Preventing Moisture



**3.2.8** 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.

**3.2.9** For guidance regarding thermal insulation, refer to Technical Guidance Document L - Conservation of Fuel and Energy.



If 40mm drained cavity not provided, then IAB certificate is required for the system e.g external Insulation



# Recurring Design Issues -D

## Part D- Durability of Construction Materials

Design working life	Examples
10 years	Temporary structures
10 to 25 years	Replaceable structural parts
15 to 30 years	Agricultural and similar structures
50 years	Building structures and other common structures
100 years	Monumental buildings, bridges, other structures



I.S. EN 1990 – Eurocode: Basis of Structural Design

- BBA certified
- Fire tested to comply with BS476: Part 3 SAB and Part 7 Class 3



# Recurring Design Issues - E

## Design — E2

Sound.	E1	Each wall and floor separating a dwelling from - (a) another dwelling or dwellings, (b) other parts of the same building, (c) adjoining buildings, shall be designed and constructed in such a way so as to provide reasonable resistance to sound.
Reverberation.	E2	The common internal part of a building which provides direct access to a dwelling shall be designed and constructed so as to limit reverberation in the common part to a reasonable level
Definitions for this Part.	E3	In this Part -  "Reverberation" means the persistence of sound in a space after a sound source has been stopped.

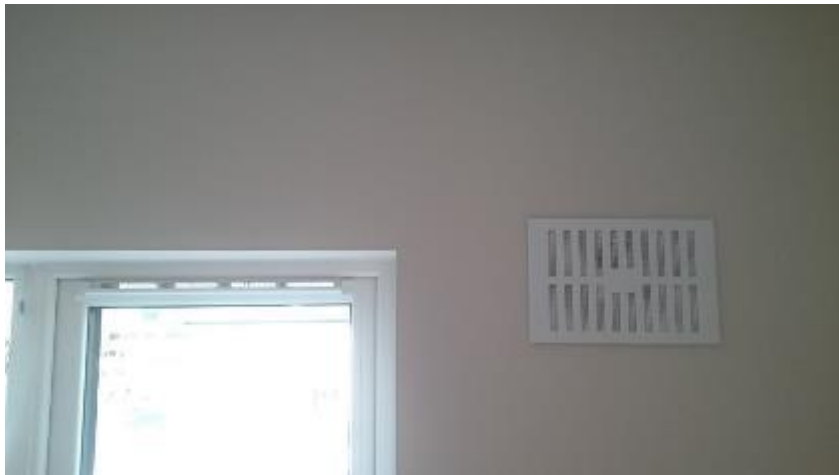


Regulation E2 aims to control the level of unwanted sound in the common areas of apartment blocks.



# Recurring Design Issues - F

## Natural — Vent Size Design?



**DNA PARTNERS**  
 CARBON-NEUTRAL DESIGNERS LLP, DEERFIELD, COLORED  
 CO LOC TEL  
 1000 W. WASHINGTON ST., SUITE 1000, DENVER, CO 80202  
 TEL: 303.733.1111 FAX: 303.733.1112

**VENTILATION VALIDATION CERTIFICATE**

Client Name: [Redacted]  
 Address: [Redacted]  
 Project Name: [Redacted]  
 Design/Construct: [Redacted]  
 Date of Issue: [Redacted]

Room	Area (m²)	Volume (m³)	Design Flow (l/s)	Measured Flow (l/s)
Living Room	25.0	150.0	1.5	1.5
Bedroom	15.0	90.0	1.0	1.0
Bathroom	8.0	48.0	0.5	0.5
Kitchen	10.0	60.0	0.8	0.8
Hallway	5.0	30.0	0.3	0.3
Staircase	12.0	72.0	0.6	0.6
Garage	20.0	120.0	1.2	1.2

Overall Compliance: **Pass**

Prepared by: [Redacted]  
 Checked by: [Redacted]  
 Date: [Redacted]

- Design of Background Vent Free Area

**Ventilation validation certificate** **NSAI**

Building address: [Redacted]  
 Building type: [Redacted]  
 Floor floor area: [Redacted]  
 Mechanical system: [Redacted]  
 Name of assessor: [Redacted]  
 Validation certificate number: [Redacted]

Room	Presented design supply air flow rate (l/s)		Measured supply air flow rate at trickle (l/s)		Measured supply air flow rate at boost (l/s)	
	Trickle	Boost	Trickle	Boost	Trickle	Boost
Living Room	1.5	1.5	1.5	1.5	1.5	1.5
Bedroom	1.0	1.0	1.0	1.0	1.0	1.0
Bathroom	0.5	0.5	0.5	0.5	0.5	0.5
Kitchen	0.8	0.8	0.8	0.8	0.8	0.8
Hallway	0.3	0.3	0.3	0.3	0.3	0.3
Staircase	0.6	0.6	0.6	0.6	0.6	0.6
Garage	1.2	1.2	1.2	1.2	1.2	1.2

Room	Presented design extract air flow rate (l/s)		Measured extract air flow rate at trickle (l/s)		Measured extract air flow rate at boost (l/s)	
	Trickle	Boost	Trickle	Boost	Trickle	Boost
Living Room	1.5	1.5	1.5	1.5	1.5	1.5
Bedroom	1.0	1.0	1.0	1.0	1.0	1.0
Bathroom	0.5	0.5	0.5	0.5	0.5	0.5
Kitchen	0.8	0.8	0.8	0.8	0.8	0.8
Hallway	0.3	0.3	0.3	0.3	0.3	0.3
Staircase	0.6	0.6	0.6	0.6	0.6	0.6
Garage	1.2	1.2	1.2	1.2	1.2	1.2

1. Check that the presented General supply rates matched the measured rates.

2. Check that the presented Boost supply rates matched the measured rates.

3. Check that the presented General extract rates matched the measured rates.

4. Check that the presented Boost extract rates matched the measured rates.

5. Check that the Supply and extract rates are reasonably balanced. Airflow supply rates should be greater or equal to extract rates; and in all cases, the supply airflow rate should be no greater than 15% above extract airflow rate.

6. Check overall compliance.

7. Check the validator comment on Part F compliance.

8. Check the registration status of the validator on the NSAI webpage.

Approved: [Redacted] Name, Company: [Redacted] NSAI Validation No: [Redacted]

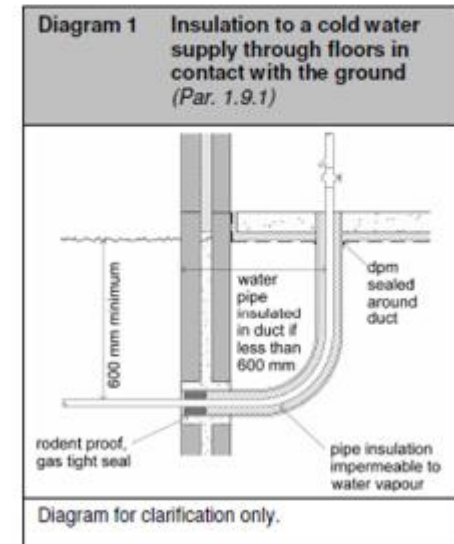
- Ventilation Validation Certificate 16



# Recurring Design Issues - G

## Insulation — Freezing

"1.9.1 The underground service pipe from the external meter/stopcock to the dwelling has a minimum cover of 600mm. The minimum cover should be maintained along the whole pipe length. Where the pipe is close to the external wall, the pipe should be insulated with insulation impermeable to water vapour (see Diagrams 1 & 2)."



# Recurring Design Issues - H

## Does this pipe satisfy Table 7 Tgd H?



Table 7 Materials for below ground gravity drainage	
Material	Irish / British Standard
<b>Rigid pipes</b>	
fibre cement	I.S. EN 588-1
vitrified clay	I.S. EN 295 BS 65
concrete	I.S. 6 BS 5911 I.S. EN 1916 and for surface water drainage only I.S. 166
grey iron	I.S. 262 BS 437
ductile iron	I.S. EN 598 I.S. 262
<b>Flexible pipes</b>	
PVC-u	BS 4660 I.S. EN 1401-1 BS ISO 4065
PP	I.S. EN 1852
Structure walled plastic pipe	I.S. EN 13476
<i>Note: Some of these materials may not be suitable for conveying trade effluent.</i>	

110mm (4") Sewer Pipe should have a wall thickness of 3.2mm and meet a Stiffness Class of SN4 for compliance with either EN Standard listed in Table 7: Part H Building Regulations 2010

## Recurring Design Issues - J

# Carbon Detectors — Location



# LPG — Cylinder Location

## Recurring Design Issues - K

# Guarding — Restrictors



# Handrail — Correct High

# Recurring Design Issues - L

## Overheating Calculations



### 1.3.5 Limiting Heat Gains

1.3.5.1 Guidance is provided in DEAP for carrying out overheating assessment.

Reasonable provision to limit heat gains can be demonstrated by showing through the DEAP calculation that the dwelling does not have a risk of high internal temperatures. (revised DEAP methodology to be published).

Where an overheating risk is indicated in DEAP, further guidance is provided in CIBSE TM 59 to ensure overheating is avoided for normally occupied naturally ventilated spaces.

1.3.5.2 CIBSE TM 37 provides the following recommendations and further guidance to reduce or avoid solar overheating:



Natural Ventilation Overheating Results

Zone Name	Room Use	Wind Speed (m/s)	Occupied Summer Hours	Max. Exceedable Hours	Criterion 1: #Hours Exceeding Comfort Range	Annual Night Occupied Hours for Bedroom	Max Exceedable Night Hours	Criterion 2: Number of Night Hours Exceeding 26 °C for Bedrooms	Result
4F1 Bedroom 1	Bedroom	0.1	3672	110	614	3285	32	14	Fail
4F1 Bedroom 2	Bedroom	0.1	3672	110	280	3285	32	31	Fail
4F1 Bedroom 3	Bedroom	0.1	3672	110	273	3285	32	18	Fail
4F1 Living/Kitchen (3 bed)	Living Room / Kitchen	0.1	1989	59	39	N/A	N/A	N/A	Pass
4F2 Bedroom 1	Bedroom	0.1	3672	110	279	3285	32	15	Fail
4F2 Bedroom 2	Bedroom	0.1	3672	110	175	3285	32	30	Fail
4F2 Living/Kitchen (2 bed)	Living Room / Kitchen	0.1	1989	59	101	N/A	N/A	N/A	Fail
4F3 Bedroom	Bedroom	0.1	3672	110	231	3285	32	45	Fail
4F3 Living/Kitchen (1 bed)	Living Room / Kitchen	0.1	1989	59	31	N/A	N/A	N/A	Pass
4F4 Bedroom	Bedroom	0.1	3672	110	187	3285	32	37	Fail
4F4 Living/Kitchen (1 bed)	Living Room / Kitchen	0.1	1989	59	31	N/A	N/A	N/A	Pass
4F5 Bedroom 1	Bedroom	0.1	3672	110	171	3285	32	20	Fail
4F5 Bedroom 2	Bedroom	0.1	3672	110	129	3285	32	12	Fail
4F5 Living/Kitchen (2 bed)	Living Room / Kitchen	0.1	1989	59	52	N/A	N/A	N/A	Pass
4F6 Bedroom	Bedroom	0.1	3672	110	222	3285	32	42	Fail
4F6 Living/Kitchen (1bed)	Living Room / Kitchen	0.1	1989	59	30	N/A	N/A	N/A	Pass
4F7 Bedroom 1	Bedroom	0.1	3672	110	115	3285	32	9	Fail
4F7 Bedroom 2	Bedroom	0.1	3672	110	209	3285	32	15	Fail
4F7 Living/Kitchen (2 bed)	Living Room / Kitchen	0.1	1989	59	49	N/A	N/A	N/A	Pass
4F8 Bedroom 1	Bedroom	0.1	3672	110	189	3285	32	31	Fail
4F8 Bedroom 2	Bedroom	0.1	3672	110	239	3285	32	43	Fail
4F8 Living/Kitchen (2 bed)	Living Room / Kitchen	0.1	1989	59	38	N/A	N/A	N/A	Pass
F1 Bedroom	Bedroom	0.1	3672	110	57	3285	32	0	Pass

## Recurring Design Issues - M

# Access — Gradient



# Toilet — Minimum Area

# Recurring Design Risks – Not Referenced in Building Regulations

## Project Supervisor Design Process



### Safety Health and Welfare at Work (Construction) Regulations 2013

- **design to simplify future maintenance and cleaning work, for example:**
  - make provision for safe permanent access;
  - design access areas for future maintenance which can accommodate work-at-height equipment;
  - specify windows that can be cleaned from the inside;
  - design plant rooms to allow safe access to plant and for its removal and replacement;
  - design safe access for roof-mounted plant and roof maintenance.

**PSDP**

Recurring Design Risks – Not Referenced in Building Regulations

## Project Supervisor Design Process

### Building Regulations



- A-Blocks/fixings
- B-External fire spread
- C-Moisture penetration
- D-Materials/Installation Instructions
- E-Noise/vibration
- F-
- G-Drainage for Condensation
- H-
- J
- K
- L-Unit Performance DEAP
- M

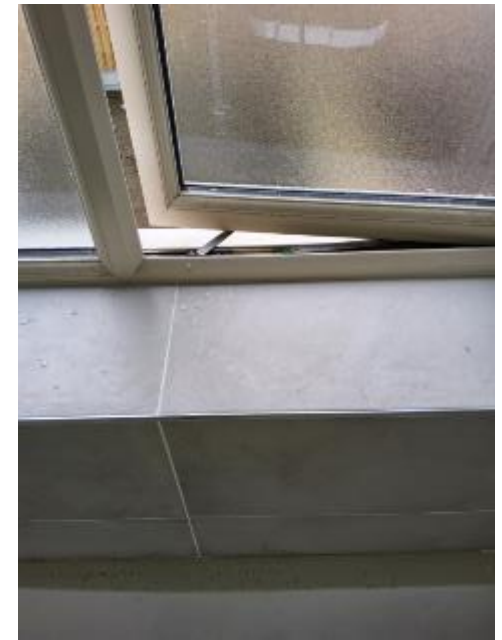


# Recurring Design Risks – Not Referenced in Building Regulations

## Part K- Climbable Toilet under window



- Change Window Design
- Change room layout-move toilet
- Fit Permanent restrictor



# Recurring Design Risks – Not Referenced in Building Regulations

## Part K – Slip Resistance floor Finishes

Floor R-Ratings Explained

R1 to R8 do not exist	R9	R10	R11	R12	R13
	High Slip Risk	Moderate Risk	Low Slip Risk		

(<http://www.hse.gov.uk/pubns/geis2.pdf>).

Table1 DIN R Values for Specifying Slip Resistance

Slip Resistance Classification	Ramp Inclination	Typical Applications
<b>R9</b>	< 9°	Low risk internal applications, customer reception areas
<b>R10</b>	10° to 19°	Toilet and bathroom areas, self-service cafeterias
<b>R11</b>	20° to 27°	Cold stores, dish washing areas
<b>R12</b>	28° to 35°	Liquid spillage areas, large commercial kitchens
<b>R13</b>	Over 35°	High risk of slip, oil spillage or similar present





# Thank You

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