



ACHIEVING COMPLIANCE WITH THE BUILDING (SCOTLAND) REGULATIONS 2004 USING BS 7671: 2001 (2004)

By Geoff Cronshaw

Introduction

This is part 1 of a two-part article, which gives an overview of how the Building Regulations affect electrical installations and how the requirements of the mandatory standards in schedule 5 are met. Part 2 of the article will deal with the new system of building standards and certification, the role of the Scottish Building Standards Agency, the various technical handbooks and the warrant system, etc.

1. Overview of how the Building Regulations affect electrical installations.

The Building (Scotland) Regulations 2004 apply to domestic and non-domestic buildings.

■ Regulation 8

- Fitness and durability of materials and workmanship.

■ Regulation 9

- Standards applicable to construction.

■ Regulation 10

- Standards applicable to demolition.

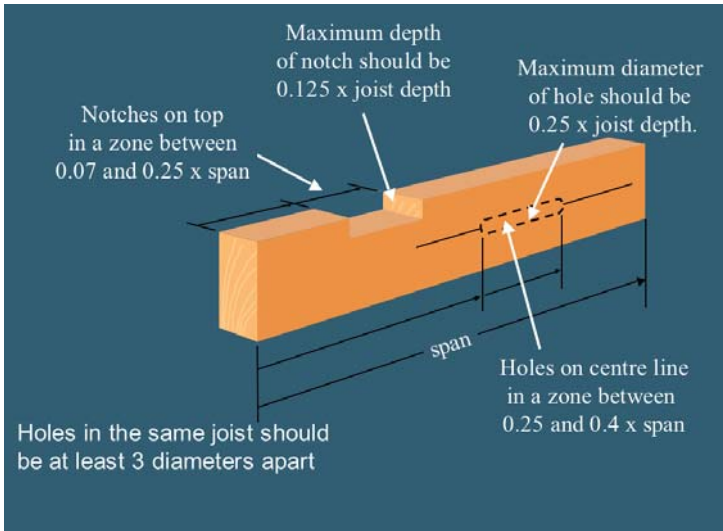
■ Regulation 11

- Standards applicable to provision of services, fitting or equipment.

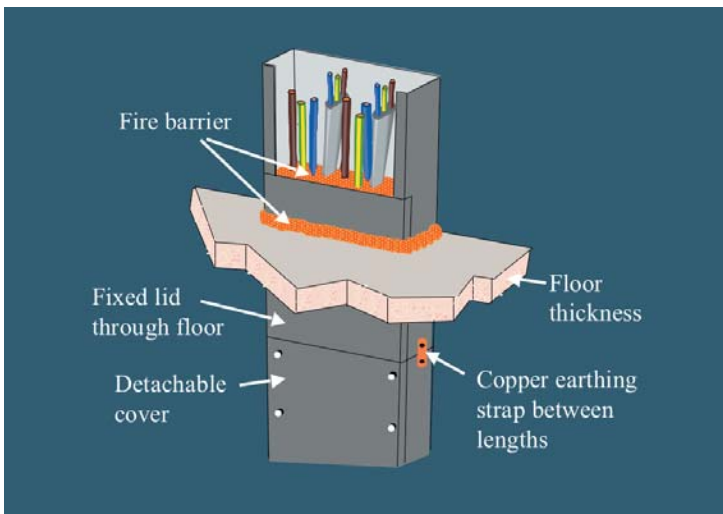
2. Overview of how the requirements of the mandatory standards in schedule 5 of the Building Regulations are met.

Standard 1.1 Structure. This has Structural requirements – cutting, drilling, chasing, penetrating or interfering with the structure.

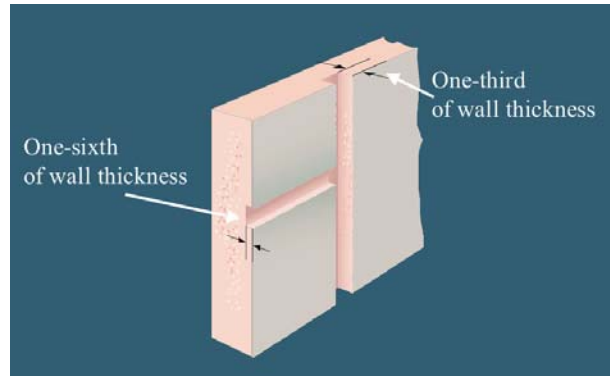
- The basic requirement for those installing electrical installations in a building is not to



Notches and holes in wooden joists



Cable trunking fire sealed where it passes through a floor penetration



Chases in walls

cut, drill, chase, penetrate or in any way interfere with the structure so as to cause significant reduction in its load bearing capability.

Vertical chases should not be deeper than one-third of the wall thickness or in cavity walls one-third of the thickness of the leaf. Horizontal chases should not be deeper than one-sixth of the thickness of the leaf or wall. Chases should not be so positioned as to impair the stability of the wall particularly where hollow blocks are used.

Standard 2.1 Compartmentation, Standard 2.2 Separation, Standard 2.3 Structural protection, and Standard 2.4 Cavities, have requirements for the protection against fire.

- Regulation 527-02 of BS 7671 has requirements as regards the sealing of wiring system.
- Regulation 522-12-03 of BS7671 has requirements where wiring systems penetrate load bearing elements of a building.



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Standard 2.5 Internal linings, has requirements for protection against fire spread on internal linings.

- Every building must be designed and constructed in such a way that in the event of an outbreak of fire within the building, the development of fire and smoke from the surfaces of walls and ceilings within the area of origin is inhibited.
- This clause has requirements regarding thermoplastic materials in light fitting diffusers.
- Where light fitting diffusers form an integral part of a fire-resisting ceiling which has been satisfactorily tested, the amount of thermoplastic material is unlimited.
- Where light fittings with thermoplastic diffusers do not form an integral part of the ceiling, the amount of thermoplastic material is unlimited provided the lighting diffuser is designed to fall out of its mounting when softened by heat.

Standard 2.10 Escape lighting – Every building must be designed and constructed in such a way that in the event of an outbreak of fire within the building, illumination is provided to assist in escape.

- The emergency lighting should be installed in accordance with BS 5266.

Standard 2.11 Communication, has requirements for alerting occupants in the event of an outbreak of fire within the building.



Example of fire alarm call point

- BS 5839 is the British Standard to refer to.
- Clause 2.14 has requirements to provide facilities to assist fire-fighting or rescue operations. This includes requirements for smoke extract equipment etc.

Standard 3.3 Flooding and Ground water – has requirements for every building to be designed and constructed in such a way that there will not be a threat to the building or the health of the occupants as a result of flooding and the accumulation of ground water.



Illustration of flooding and groundwater

- In compliance with this requirement, the electricity distributor and installer may be required to take into account the risk of flooding. Distributor's equipment and the installation consumer unit/fuseboard should be installed above the flood level. Upstairs power and lighting circuits and downstairs lighting should be able to be installed above the flood level. Upstairs and downstairs circuits should have separate overcurrent devices (fuses or circuit breakers).
- The Electricity Safety, Quality and Continuity Regulations 2002 require the electricity distributor to install the cut-out and meter in a safe location, where they are mechanically protected and can be safely maintained.

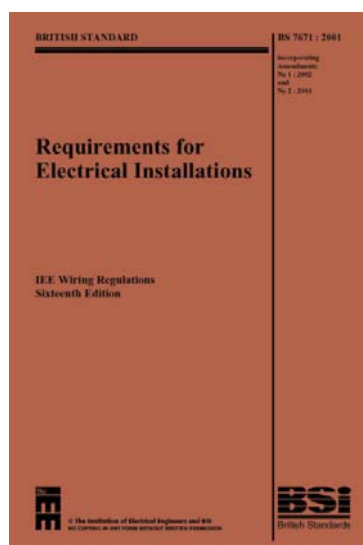
Standard 3.10 Precipitation, has requirements that every building must be designed and constructed in such a way that there will not be a

threat to the building or the health of the occupants as a result of moisture from precipitation penetrating to the inner face of the building.

- Ensure that holes for electrical services entering a building are sealed.

Standard 4.5 Electrical Safety – has requirements that every building must be designed and constructed in such a way that the electrical installation does not:

- threaten the health and safety of people in and around, the building; and
 - become a source of fire.
- An electrical installation, whether at extra low or low voltage should be designed, constructed, installed and tested such that it is in accordance with the recommendations of BS 7671 : 2001 as amended.



BS 7671 : 2001 (2004). Requirements for electrical installations

Standard 4.6 Electrical fixtures – has requirements that every building must be designed and constructed in such a way that lighting points and socket outlets are provided. (Domestic only).

- A dwelling to be provided with a minimum number of lighting points.
- Switching arrangements to be provided for lighting serving stairways at each storey.
- Light switches to be provided for common areas.
- Light switches in common access corridors or

stairways or other communal area should be accessible, and operable by, disabled people.

Standard 5.1 Resisting sound transmission to dwellings using appropriate constructions – This has requirements that Every building must be designed and constructed in such a way that each wall and floor separating one dwelling from another, or one dwelling from another part of the building, or one dwelling from a building other than a dwelling, will limit the transition of noise to the dwelling to a level that will not threaten the health of the occupants the dwelling or inconvenience them in the course of normal domestic activities provided the source noise is not in excess of that from normal domestic activities.

- Note: This standard does not apply to:
 - fully detached houses
 - roofs or walkways with access solely for maintenance, or solely for the use of the residents of the dwelling below.

Specific guidance is given in SBSA Technical handbook (domestic) on the installation of down-lighters for the various types of floor that are likely to be encountered.

- A secondary ceiling should be fitted if down lighters are to be installed in a separating floor, to avoid penetration of the main ceiling layers.
- The ceiling layers should be fixed directly to the joists.
- Secondary ceiling: 50 mm x 50 mm battens, resilient ceiling bars perpendicular to battens, and 12.5 mm gypsum based board.

Standard 6.5 Artificial and display lighting – has requirements that every building must be designed and constructed in such a way that artificial or display lighting must operate and be capable of being controlled to achieve optimum energy efficiency.

- Consider using compact and tubular fluorescent fittings.
- Consider using discharge fittings.

More information of achieving compliance with the Building (Scotland) Regulations will be given in the second part of this article which will be published in the next edition of *Wiring Matters*. ■