

## The impact of the 18<sup>th</sup> Edition (BS 7671:2018) – Chapters 41, 46, 53 and Regulation 542.2.2

*Steven Devine, author of the Student's Guide to the IET Wiring Regulations and Secretary of Sub-Committee C (JPEL/64), looks at some of the proposed changes in the DPC (draft for public comment) for electrical installations, focusing on Chapters 41, 46, 53 and Regulation 542.2.2.*

**Note: the following are draft proposals only at this stage and may or may not be included in the 18th edition (BS 7671:2018), depending on the decision of the national committee, JPEL/64. This article is based on the DPC that is now available (on the [BSI website](#)) to anyone to view and to comment on.**

### Changes to Chapter 41

#### 410 Introduction

You will see some subtle differences with some of the words and phrases, such as 'in use without a fault' being replaced with 'under normal conditions'. These changes usually happen when the committee members agree improvements or that modernisation is required so that BS 7671 is more readable by those who need to use it.

You may have also noticed that the following lines have been deleted in BS 7671:2001:

- (i) 'protection in use without a fault' (now designated 'basic protection') was referred to as 'protection against direct contact'; and
- (ii) 'protection under fault conditions' (now designated 'fault protection') was referred to as 'protection against indirect contact'.

The terms 'basic protection' and 'fault protection' have been around for many years now and the need to identify the change is no longer necessary.

New words are introduced and terminologies change over the years. The Wiring Regulations are over 130 years old and therefore these changes are important in keeping up to date with current use and language, despite how subtle such changes may seem.

#### Regulation 411.3.1.2

It's proposed that this Regulation should have an additional line in the 18<sup>th</sup> Edition due to the increase in the number of services to buildings that have insulating inserts, such as water pipes and gas pipes. In most cases, such an increase could result in the service pipes not meeting the characteristics of an extraneous-conductive part (a conductive part that is liable to introduce an earth potential into the installation) and, as the risk of introducing earth potential is reduced, the pipes no longer require protective equipotential bonding. The following line has been included in Regulation 411.3.2:

*Metallic pipes entering the building having an insulating section at their entrance need not be connected to the protective equipotential bonding.*

This means that electrical installers will need to identify whether or not an incoming service pipe has an insulating insert to determine if it is required to have protective equipotential bonding or not.



### **Regulation 411.3.3 Additional protection requirements for socket-outlets and for the supply of mobile equipment for use outdoors**

According to the current requirements in AC systems, additional protection by means of an RCD in accordance with Regulation 415.1 shall be provided for socket-outlets with a rated current not exceeding 20 A, and mobile equipment with a current rating not exceeding 32 A for use outdoors. However, there is currently an exception to this requirement as long as a documented risk assessment is carried out to justify that RCD protection will not improve the safety of the circuit.

There has been a significant change proposed so that there is no longer an exception for the provision of RCDs for socket-outlets with a current rating not exceeding 32 A. As the availability of RCDs has increased and the cost gradually decreased over the years it is commonly found in modern installations that all circuits including lighting are provided with RCD protection. There is no doubt that they are a very efficient protective device and, where practicable, they are a valuable addition to the electrical installation.

This means that electrical installers will need to find alternative solutions to provide a power supply to equipment that is required to be on a non-RCD protected circuit, such as switch fused connection units.

### **Regulation 411.3.4**

The proposed new 411.3.4 requires that all luminaires within domestic (household) premises are to have additional protection by a 30 mA RCD when installed in an AC final circuit. Back in the 1950s it was not required that a lighting circuit have a cpc provided; you may even still come across lighting circuits today that do not have a cpc, so we can see how the requirements are continually reviewed and amended to improve the safety of electrical installations.

This new proposal means that electrical installers will now have to provide RCD protection on all new lighting circuits as well as those that are significantly altered.

## **Chapter 46**

You're probably thinking that you have seen this before and you would be right. Chapter 46 appeared in the Wiring Regulations up until 2008 when the 17<sup>th</sup> edition was published. It consisted of two pages titled 'Isolation and Switching'. In 2008, when the 17<sup>th</sup> edition was published, Chapter 46 was adopted by Chapter 53 Protection, Isolation, Switching, Control and Monitoring. Ten years on a lot has changed and Chapter 46 is no exception; it is proposed that Chapter 46 Isolation and Switching is to appear again, only this time it will consist of three pages covering Isolation, Functional Switching (Control), Auxiliary Circuits, Motor Control, Switching Off for Mechanical Maintenance, and Emergency Switching Off. All of these were previously covered in Section 537 of the 3<sup>rd</sup> Amendment of the 17<sup>th</sup> edition of BS 7671. Chapter 46 provides requirements for the function while Chapter 53 provides requirements for the devices.

Chapter 53 has received a lot of attention during the development of the 18<sup>th</sup> Edition. You will find a number of changes – not only the relocating of some parts of Section 537 to Chapter 46, but also the introduction of Annex A 53 (informative), which provides information about devices and their associated functions. It is proposed that this Annex include Table A 53.2, which shows the types of combination of devices and cells and how various modes of co-

ordination can affect the operation of devices. This section will prove extremely useful for those who are involved with the design and installation of systems that consist of a wide range of protective devices where consideration to selectivity is required.

### **Regulation 542.2.2**

Another significant change to Part 5 is a new note that strongly recommends the provision of a foundation earthing system in new buildings. Regulation 542.2.3 requires that, where foundation earthing earth electrodes are installed, the materials and dimensions of the earth electrodes are to be selected so that they can withstand corrosion and have adequate mechanical strength.

The installation of a foundation earthing system has been a requirement in a number of other countries around the world for some time. In Germany the primary purpose behind installing foundation earthing systems is to improve earth fault loop impedance for TT systems. However, there are some other benefits, including the reduction of potential difference between the general mass of Earth and any exposed- or extraneous-conductive-parts in the event of a PEN conductor failure.

This means that electrical installers will have to consider installing a foundation earthing system in new installations, if it is reasonably practicable to do so.

### **Conclusion**

This article only gives an overview of draft proposals, which may or may not be included in the 18th edition (BS 7671:2018), depending on the decision of the national committee, JPEL/64.

The DPC (draft for public comment) is now available to the public (on the [BSI website](#)) for comment.