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CREATING CABLE PATHWAYS



BACKGROUND TO CHANGES

From 1 January 2019, UK electrical installation standards require all wiring systems within a building to be adequately supported against their premature collapse in the event of a fire.

The changes form part of the BS 7671:2018 IET Wiring Regulations 18th Edition, and provide a substantial update to improve the electrical safety of buildings across the UK. The alterations also sit against the backdrop of the Dame Judith Hackitt Independent Review of Building Regulations and Fire Safety Final Report, as well as the Construction Products Regulation.

In this guide, we aim to provide assistance and recommendations on how to best specify cable containment systems to maximise fire safety and ultimately, explain how to create a cable pathway through a building whilst navigating the current standards landscape.

Legrand UK and Ireland



The new regulatory framework must be simpler and more effective. It must be truly outcomes-based (rather than based on prescriptive rules and complex guidance) and it must have real teeth, so that it can drive the right behaviours.



Building a Safer Future: Final Report¹

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707785/Building_a_Safer_Future_-_web.pdf

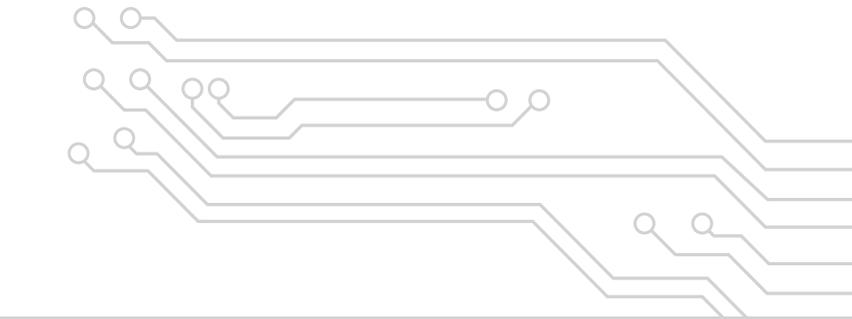
THE FOUNDATIONS

Fire safety in design, management & use BS 9999:2017

Compliance with the 'Fire safety in design, management & use' BS 9999:2017 remains unchanged and a fundamental basic of building design. The package covers the four main areas that influence fire safety measures:

- Fire safety management
- The provision of means of escape
- The structural protection of escape facilities and the structural stability of the building in the event of a fire
- The provision of access and facilities for firefighting

The standard provides good practice guidelines to safeguard the lives of building occupants and firefighters.



Construction Products Regulation (CPR) BS EN 50575:2014+A1:2016

This covers products that are seen as a fixed part of a building or, those elements that form part of its structure. The 2016 amendment 1 to BS EN 50575 states that from July 2017 it was obligatory for cables to be accompanied by a DoP (declaration of conformity) and include a CE mark. What this means, is that only regulated cables should be used in buildings and relates to the cable's 'Reaction to Fire' – measuring flame propagation, smoke production and density, flaming droplets and acidity of gases when burned.



WHAT'S CHANGED?

BS 7671:2018

As of January 1st 2019, UK electrical installation standards require wiring systems to be adequately supported against premature collapse in the event of a fire. Previously a requirement of escape routes, the BS 7671:2018 IET Wiring Regulations 18th Edition provides a substantial update to improve electrical safety in buildings.

RELEVANT SECTIONS

BS 7671 Chapter 42 – Protection against thermal effects - 'Cable management in escape routes and areas prone to fire'

422.2 – conditions for evacuation in an emergency

422.2.1 – which focuses on escape routes has been re-drafted

- A note has been added stating that cables need to satisfy requirements of the Construction Products Regulations for their reaction to fire (Appendix 2, item 17)
- Requirements have also been added for cables supplying safety circuits
- **Cables must not encroach on escape routes** – unless they meet the relevant part of the BS EN 60332-3 series and achieve at least 60% light transmittance in accordance with BS EN 61034-2
- **Cables in escape routes should be as short as practicable**
- **Cables encroaching on escape routes shall not be installed within arm's reach**, unless they have mechanical protection against damage, likely to occur in an evacuation.
- **Where used, the cable management systems shall be used with one or more of the following, all classified as non-flame propagating:**
 - Cable trunking and ducting systems (according to BS EN 50085)
 - Cable tray and ladder systems (according to BS EN 61537)
 - Powertrack systems (according to BS EN 61534)

RELEVANT SECTIONS

422.3 – locations with risk of fire due to the nature of processed or stored materials

i.e. somewhere where chemicals, flammable materials etc are stored.

- Cable trunking and ducting systems **shall** satisfy the test under fire conditions as per the BS EN 50085 series
- Cable tray and ladder systems shall satisfy the test under fire conditions within BS EN 61537
- Powertrack systems shall satisfy the resistance to flame propagation specified in BS EN 61534
- In addition, wiring systems must be selected and installed to minimise the propagation of flame (CPR).
- It's important to also note here that the risk of flame propagation can be high where cables are bunched together or installed in long vertical runs

Chapter 52 – selection and erection of wiring systems - Section 521 – 'types of wiring system'

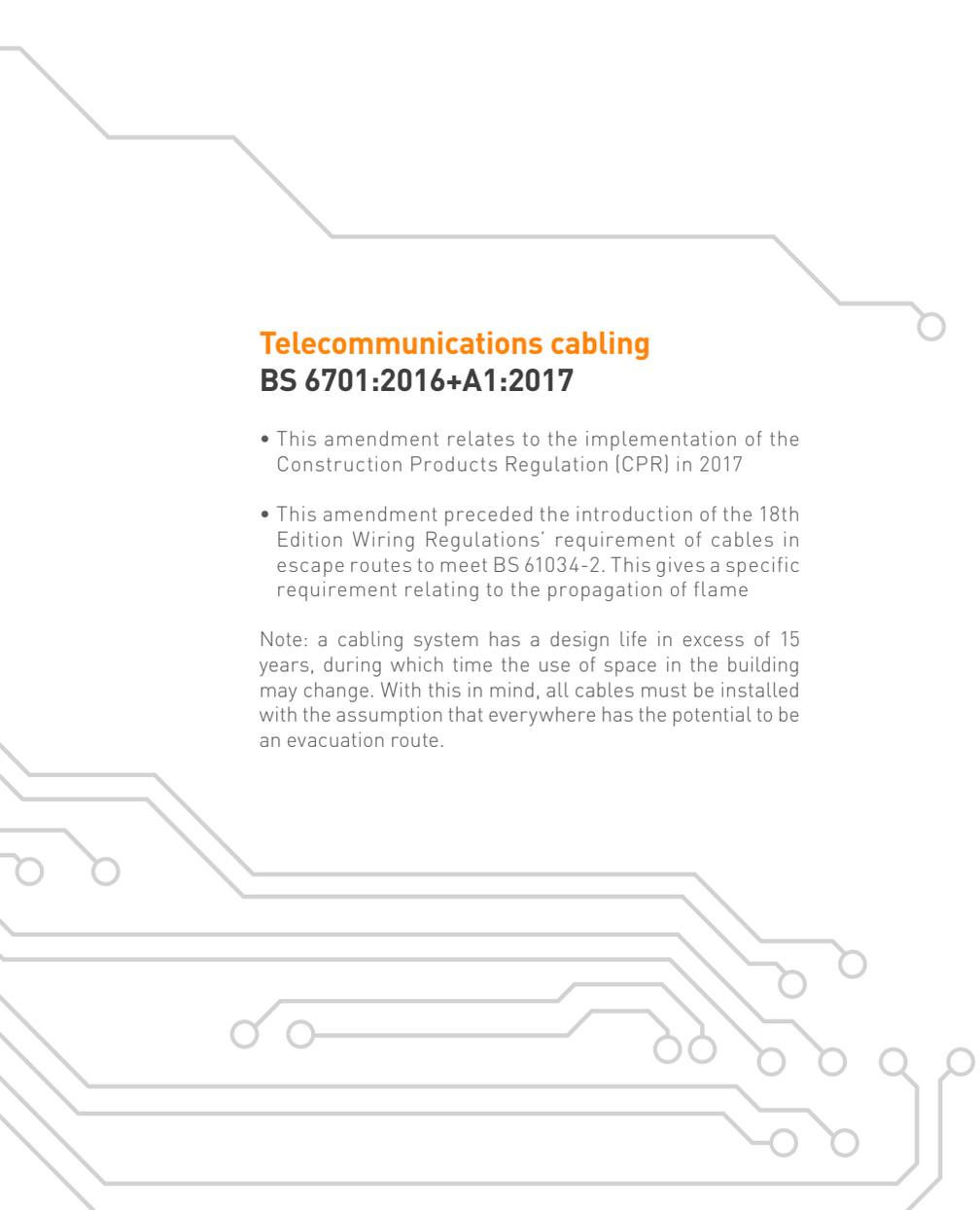
- 521.10 – installation of cables
- 521.10.202 – **SIGNIFICANT CHANGE.** This clause replaces 521.11.201. **Wiring systems shall be supported such that they are not liable to premature collapse in the event of a fire**
- The biggest factor here is that changes apply to cables throughout an installation not just escape routes. There are several important notes here:
 - Wiring systems that hang across access or egress routes may hinder evacuation and firefighting activities
 - Therefore, cables installed on or in steel cable containment systems are deemed to meet the requirements of this regulation
 - Non-metallic cable clips and ties cannot be used as a sole means of support, unless used in conjunction with metallic cable trunking
 - Suitably spaced steel and copper clips, saddles and ties are examples that will meet the requirements of this regulation

Section 527 - wiring systems to minimise the spread of fire

- 527.1.1 – the risk of spread of fire shall be minimised by the selection of appropriate materials
- 527.1.2 – a wiring system shall be installed so that the general building structural performance and fire safety are not reduced

Note: The guidelines point to the fact that any area of a building could be used as an escape route and therefore needs to be protected accordingly.

Cables installed on or in steel cable containment systems are deemed to meet the requirements of this regulation.



Telecommunications cabling BS 6701:2016+A1:2017

- This amendment relates to the implementation of the Construction Products Regulation (CPR) in 2017
- This amendment preceded the introduction of the 18th Edition Wiring Regulations' requirement of cables in escape routes to meet BS 61034-2. This gives a specific requirement relating to the propagation of flame

Note: a cabling system has a design life in excess of 15 years, during which time the use of space in the building may change. With this in mind, all cables must be installed with the assumption that everywhere has the potential to be an evacuation route.

CABLE SYSTEMS FOR LIFE SAFETY

BS 8519:2010

Section 15 – cable installation practice

'The resistance to fire of a cable containment system should be at least equivalent to the survival time required for the cable'

Note: cable containment systems comprise of cables, the containment, supports and fire stopping.

Section 16 – cable support systems

Failure to observe the design criteria will result in premature collapse of the cable containment system and the circuit failure of the cables being supported.

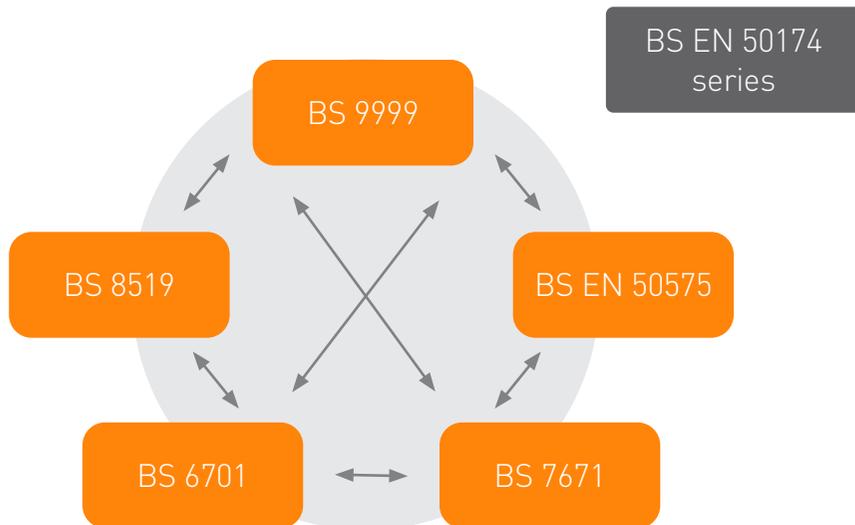
- Note: the support system should have a fire survival time equal to that of the cables it supports and for the same defined fire conditions.

CABLE ROUTING

Bringing it all together

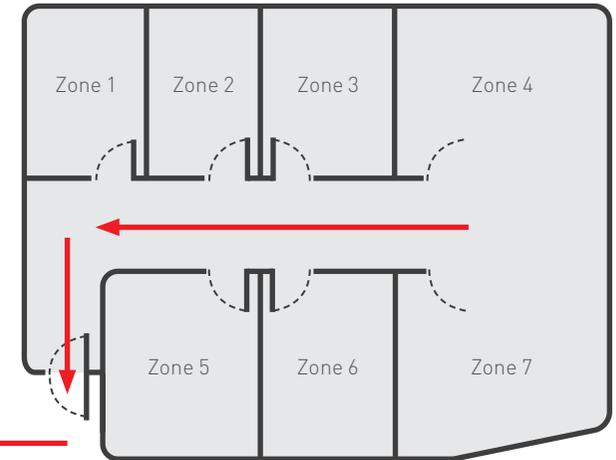
In short, wiring systems must be adequately supported against their premature collapse in the event of a fire. Previously, this was just a requirement of escape routes. This is a substantial update which will improve the safety of buildings and their occupants considerably.

Taking into account cable management requirements while ensuring compliance with applicable regulations and standards, Legrand's CPD 'Creating a Cable Pathway Through a Building' brings this all together to offer guidance to help you create effective cable management pathways throughout a building.



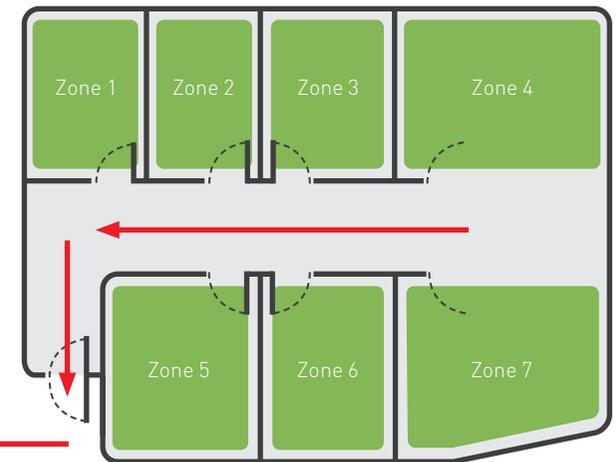
Previously (for example)...

- Cable may have been laid in ceiling voids
- Cables crossing escape routes
- Plastic containment
- BS 9999
- BS 7671
- BS 8519



Now...

- Cables supported against premature collapse
- Metal containment or metal clips
- Cables reaction to fire
- BS 9999
- BS EN 50575
- BS 6701
- BS 8519
- BS EN 50174



A FINAL NOTE

Modern buildings do change, regardless of purpose, and therefore buildings must be designed with this in mind. Whereas cables may have historically been laid in ceiling voids, across escape routes and held in plastic containment, this can no longer be the case and we must design and install systems that are supported in the event of premature collapse, throughout the installation.

While this may seem like a major step-change to industry, it reflects the changing needs of our built environment and more importantly, is already documented in various forms across standards. There are already a variety of solutions available in the marketplace, but the key is for the design of a building to be considered as a whole with fire safety a key priority at the planning stages of any build.

For further information about the changes, schedule a CPD session at
www.legrand.co.uk/cpd



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