WIRING MATTERS

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Letter to the Editor

We present a letter from Frank Smith of FS Consulting, clearing up an inaccuracy in a previous Wiring Matters article.

Mr Cameron Fraser

The Editor

Wiring Matters

The Institution of Engineering and Technology

20 July 2022

Dear Sir

I read with interest the article in May's *Wiring Matters,* and note with embarrassment the generous acknowledgement to my part (with others) in developing the new regulations regarding protected escape routes in Amendment 2 to BS 7671.

It is clearly beneficial to publicise the amendment and its rationale. Unfortunately the article contains an inaccuracy, which I would like to redress in this letter; especially as it may have exacerbated further the confusion I understand there to be amongst some electrical designers as to what is, and what is not, a protected escape route.

The intent of the amendment was to make BS 7671 more consistent with fire safety design practice as set out in, for example, BS 9999 and BS 9991 and the guidance within Approved Document B to the England and Wales Building Regulations; by removing reference to the building complexity categories BD1 to BD4 in Appendix 5 of the pre-Amendment standard and replacing it with restrictions on cables in protected escape routes.

To ensure safe means of escape in the event of fire, BS 9999 et al set limits on the distances that must be travelled before someone reaches a place of safety – either ultimate safety (ie the open air) or a place of relative safety – generally a staircase, but in some cases a lobby or corridor, which is protected from fire by fire-resisting and smoke-resisting construction. It is these protected staircases, lobbies or corridors which are the protected escape routes defined in Amendment 2.

Such protected escape routes are critical to ensure safe escape in the case of fire and this is the reason they should not contain large quantities of combustibles, including cables.

Generally protection is required when escape routes are long because of the height of staircases, or the length of corridors. But in hotels they are also required in bedroom corridors because of the additional risk of the occupants being likely to be asleep and unfamiliar with the building. However the *Wiring Matters* article shows what could reasonably be inferred to be a hotel

bedroom corridor as not being a protected escape route, whereas it should be.

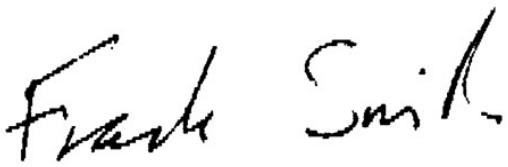
It also suggests that protected escape routes should be drab and unadorned without decoration. They can indeed be like that, and frequently are in hotels, but more often they are the normally used circulation spaces and can be properly decorated and carpeted. The key is the protection by fire and smoke-resisting construction.

The requirement that only essential cabling associated with the escape route be actually *inside* the protected corridor, staircase or lobby does not prevent the designer following these routes with cable runs. It just means that the cabling should be separated from the route by fire and smoke-resisting construction, such as a ceiling or other enclosure.

Since its publication there has been debate on the implementation of Amendment 2 and suggestions that it is over-restrictive, particularly in multi-staircase buildings, and should perhaps be refined and more focused. It would have been helpful to have had this debate during the public consultation stage of the preparation of the amendment, yet regretfully that did not happen. It is appreciated that hospitals and similar health care premises represent a special case – hence the sentence at the end of Note 1 to Regulation 422.2.

There may well be scope for some fine tuning, but nevertheless it should be noted that the new Amendment 2 actually removes restrictions on cabling in *unprotected* escape routes for BD2 – BD4 buildings. The old BS 7671 had quite stringent requirements on the types of cable that could be used in escape routes – protected or otherwise – in such premises. Moreover, because of the vague definition of what an escape route is, virtually anywhere in a building could be construed to be an escape route. Now these requirements have been removed except for protected escape routes. So overall it is a case of swings or roundabouts, or win some, lose some – not an onerous ratcheting up of the regulations.

Yours sincerely

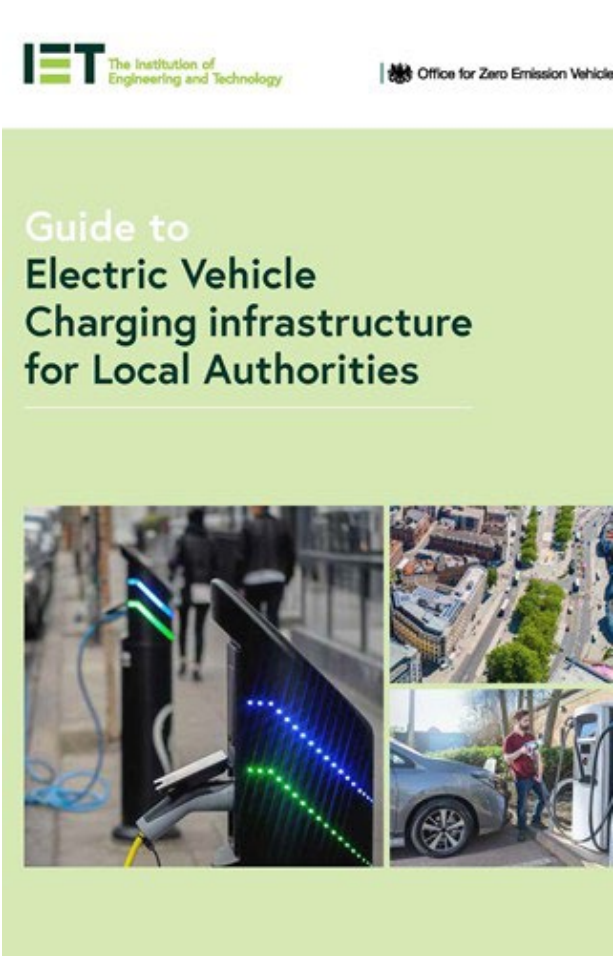


Frank Smith, MIFireE, CBEng

Fire Safety Engineering Consultant

Electric Vehicle Charging Infrastructure Guide for Local Authorities

Later this year the IET, in association with the Office for Zero Emission Vehicles within the DfT (OZEV), will be publishing this timely guide on EV charging infrastructure.



The guide (principally authored by CENEX) will be made freely available to all local authorities and covers:

- The **fundamentals** of EV charging infrastructure
- The **solution types** and their applicable use cases
- High level guidance on EV charging **strategy** and the opportunities and challenges associated with each solution type
- Site **identification** and **selection**
- How to **prepare** for EV charging deployment by considering:
    - Power provision and DNO engagement
    - Installation design best practice
    - Procurement advice including ownership and operation models, specifications, funding models and contract guidance
    - Legal implications.
- The **deployment** process including installation, commissioning, notifications, and approvals
- **Operational** considerations such as tariff structures, payment mechanisms, parking management and maintenance
- Examples of community engagement techniques and a look at future technologies

Local Authorities have a key role to play in supporting the growth of electric vehicles by encouraging and assisting EV uptake.

One way of doing this is setting plans to install and implement charging points for certain individuals or businesses who will rely on public infrastructure. These include (but are not limited to), people who have no access to off-street parking, taxi drivers, fleets and light delivery vehicle drivers.

Local Authorities also have a key role to play in electrifying their own fleets and will require the associated charging infrastructure to support this. This guide is designed to be accessible to all those who are involved in EV infrastructure planning and deployment.

The Electric Vehicle Charging Infrastructure Guide will be available for download from both the IET and DfT websites.

Back to the Forum: Withdrawn Standards

By: **Michael Peace CEng MIET MCIBSE**

Find out more about what the withdrawal of BS 7671:2018+A1:2020 means for existing projects.

There has been a lot of activity on the IET EngX Wiring and the Regulations forum regarding the changes in BS 7671:2018+A2:2022 since it was published on 28 March 2022.

BS 7671:2018+A1:2020 will be withdrawn on 27 September 2022 and as the cut-off date gets closer, the IET technical helpline has received a number of related enquiries.

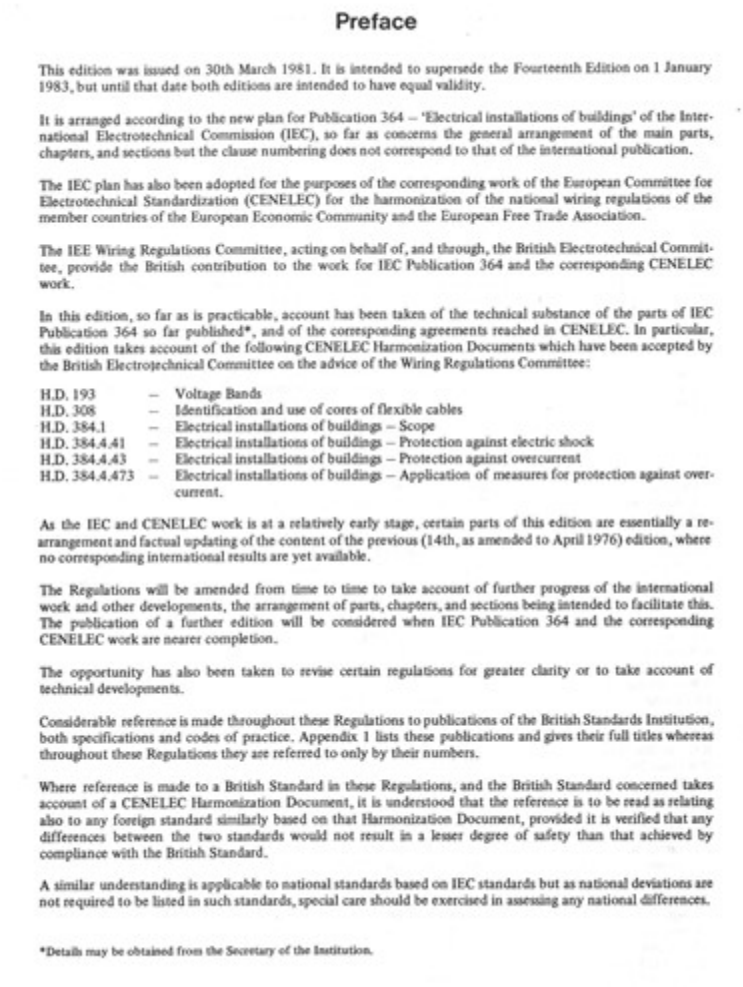
This article looks at what this means and how it affects existing projects.

When does BS 7671:2018+A2:2022 come into effect?

BS 7671:2018+A2:2022 was issued on 28 March 2022 and the instruction was that it can be implemented immediately, however, there is a six-month implementation period, during which time both standards have equal validity. That means the designer must decide which is the appropriate standard to work to during this time.

Historically, each iteration of the IEE Wiring Regulations superseded all previous editions from the date of issue. It was not until the Fifteenth Edition of the IEE Wiring Regulations in 1981 that the six-month implementation date was introduced.

Figure 1: Extract from Fifteenth Edition of IEE Wiring Regulations 1981



Preface

This edition was issued on 30th March 1981. It is intended to supersede the Fourteenth Edition on 1 January 1983, but until that date both editions are intended to have equal validity.

It is arranged according to the new plan for Publication 364 – 'Electrical installations of buildings' of the International Electrotechnical Commission (IEC), so far as concerns the general arrangement of the main parts, chapters, and sections but the clause numbering does not correspond to that of the international publication.

The IEC plan has also been adopted for the purposes of the corresponding work of the European Committee for Electrotechnical Standardization (CENELEC) for the harmonization of the national wiring regulations of the member countries of the European Economic Community and the European Free Trade Association.

The IEE Wiring Regulations Committee, acting on behalf of, and through, the British Electrotechnical Committee, provide the British contribution to the work for IEC Publication 364 and the corresponding CENELEC work.

In this edition, so far as is practicable, account has been taken of the technical substance of the parts of IEC Publication 364 so far published*, and of the corresponding agreements reached in CENELEC. In particular, this edition takes account of the following CENELEC Harmonization Documents which have been accepted by the British Electrotechnical Committee on the advice of the Wiring Regulations Committee:

H.D. 193	–	Voltage Bands
H.D. 308	–	Identification and use of cores of flexible cables
H.D. 384.1	–	Electrical installations of buildings – Scope
H.D. 384.4.41	–	Electrical installations of buildings – Protection against electric shock
H.D. 384.4.43	–	Electrical installations of buildings – Protection against overcurrent
H.D. 384.4.473	–	Electrical installations of buildings – Application of measures for protection against overcurrent.

As the IEC and CENELEC work is at a relatively early stage, certain parts of this edition are essentially a rearrangement and factual updating of the content of the previous (14th, as amended to April 1976) edition, where no corresponding international results are yet available.

The Regulations will be amended from time to time to take account of further progress of the international work and other developments, the arrangement of parts, chapters, and sections being intended to facilitate this. The publication of a further edition will be considered when IEC Publication 364 and the corresponding CENELEC work are nearer completion.

The opportunity has also been taken to revise certain regulations for greater clarity or to take account of technical developments.

Considerable reference is made throughout these Regulations to publications of the British Standards Institution, both specifications and codes of practice. Appendix 1 lists these publications and gives their full titles whereas throughout these Regulations they are referred to only by their numbers.

Where reference is made to a British Standard in these Regulations, and the British Standard concerned takes account of a CENELEC Harmonization Document, it is understood that the reference is to be read as relating also to any foreign standard similarly based on that Harmonization Document, provided it is verified that any differences between the two standards would not result in a lesser degree of safety than that achieved by compliance with the British Standard.

A similar understanding is applicable to national standards based on IEC standards but as national deviations are not required to be listed in such standards, special care should be exercised in assessing any national differences.

*Details may be obtained from the Secretary of the Institution.

IEC/CENELEC standards

It was the Fifteenth Edition of the IEE Wiring Regulations where for the first time the layout was arranged according to the new plan for the International Electrotechnical Commission (IEC) standards publication, IEC 364, now numbered IEC 60364.

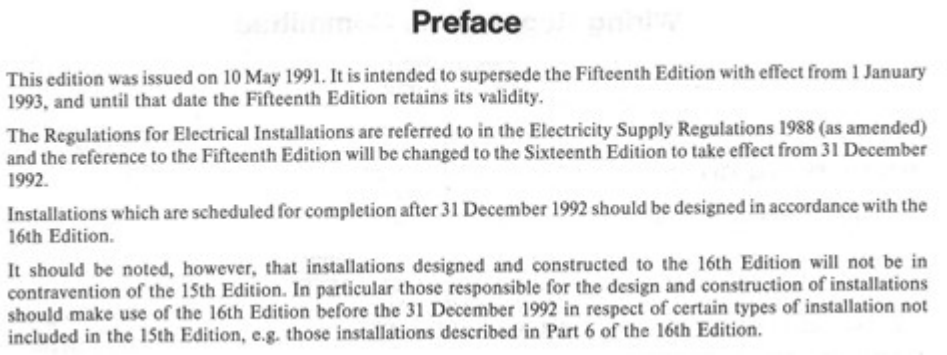
To facilitate free trade throughout Europe, the national wiring regulations were harmonised, and the UK became part of CENELEC, the European Electrotechnical Committee for standardisation. CENELEC is an association that brings together the national electrotechnical committees of 34 European countries. CENELEC is responsible for publication of Harmonised Documents (HDs).

The UK is obliged to adopt the technical intent of HDs within three years of publication, which is the main source of information for the content of BS 7671 and explains the need for regular amendments. The UK is no longer a member of the European Economic Community and the European Free Trade association; however, we remain a member of CENELEC.

Introduction of new amendments history

There have been many ways of describing the changeover period when an amendment was issued and came into force over the years. The first mention of this period came in the Sixteenth Edition of the IEE Wiring Regulations, which became a British Standard for the first time, BS 7671: 1992. At that time it was stated in the preface that *'installations scheduled for completion'* should comply with the latest edition. However, this must have caused some issues as by the time BS 7671:1992+A1:1994 was published the wording had changed. It now stated that *'installations designed after'* the implementation date should take account of the amendment to the Standard. It has remained this way since, up until now.

Figure 2: Extract from Sixteenth Edition of IEE Wiring Regulations 1991



Preface

This edition was issued on 10 May 1991. It is intended to supersede the Fifteenth Edition with effect from 1 January 1993, and until that date the Fifteenth Edition retains its validity.

The Regulations for Electrical Installations are referred to in the Electricity Supply Regulations 1988 (as amended) and the reference to the Fifteenth Edition will be changed to the Sixteenth Edition to take effect from 31 December 1992.

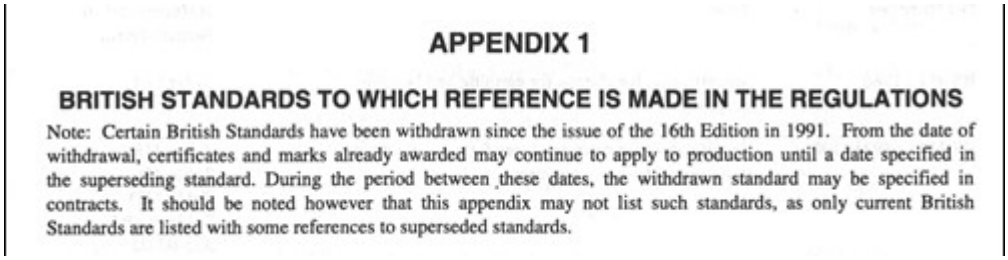
Installations which are scheduled for completion after 31 December 1992 should be designed in accordance with the 16th Edition.

It should be noted, however, that installations designed and constructed to the 16th Edition will not be in contravention of the 15th Edition. In particular those responsible for the design and construction of installations should make use of the 16th Edition before the 31 December 1992 in respect of certain types of installation not included in the 15th Edition, e.g. those installations described in Part 6 of the 16th Edition.

Introduction to BS 7671:2018+A2:2022

The introduction of the term 'withdrawn standards' is not new. In BS 7671 it has been included in the introductory note to Appendix 1 since 1994, the Sixteenth Edition of the IEE Wiring Regulations (BS 7671:1992+A1:1994), as shown in Figure 3.

Figure 3: Extract from Sixteenth Edition of IEE Wiring Regulations BS 7671:1992+A1:1994



APPENDIX 1

BRITISH STANDARDS TO WHICH REFERENCE IS MADE IN THE REGULATIONS

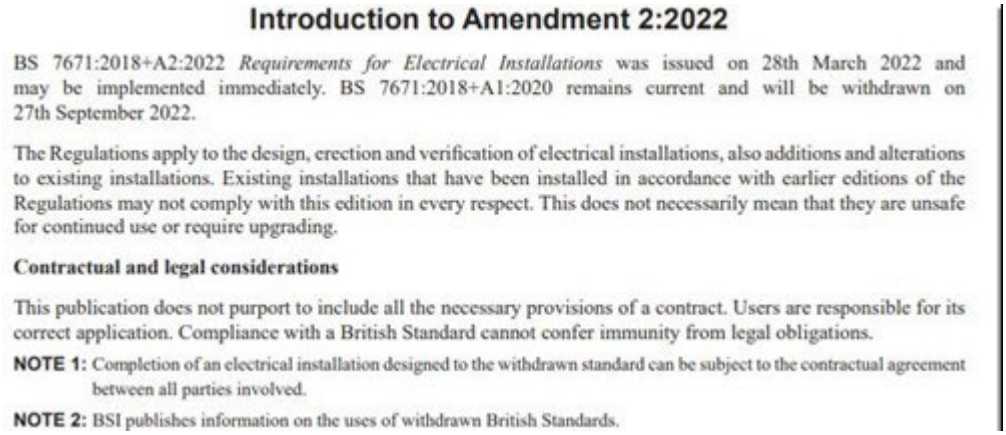
Note: Certain British Standards have been withdrawn since the issue of the 16th Edition in 1991. From the date of withdrawal, certificates and marks already awarded may continue to apply to production until a date specified in the superseding standard. During the period between these dates, the withdrawn standard may be specified in contracts. It should be noted however that this appendix may not list such standards, as only current British Standards are listed with some references to superseded standards.

The term 'withdrawn standards' is now specifically included in the introduction to BS 7671:2018+A2:2022 (as shown in Figure 4) with the intention to align with other British Standards.

The text states that BS 7671:2018+A2:2022 was issued on 28 March 2022 and may be implemented immediately. BS 7671:2018+A1:2020 remains current and will be withdrawn on 27 September 2022. Effectively during the six-month implementation period, there are two current standards with 'equal validity'.

The introduction also provides information regarding contractual and legal considerations.

Figure 4: Introduction to BS 7671:2018+A2:2022



Introduction to Amendment 2:2022

BS 7671:2018+A2:2022 *Requirements for Electrical Installations* was issued on 28th March 2022 and may be implemented immediately. BS 7671:2018+A1:2020 remains current and will be withdrawn on 27th September 2022.

The Regulations apply to the design, erection and verification of electrical installations, also additions and alterations to existing installations. Existing installations that have been installed in accordance with earlier editions of the Regulations may not comply with this edition in every respect. This does not necessarily mean that they are unsafe for continued use or require upgrading.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application. Compliance with a British Standard cannot confer immunity from legal obligations.

NOTE 1: Completion of an electrical installation designed to the withdrawn standard can be subject to the contractual agreement between all parties involved.

NOTE 2: BSI publishes information on the uses of withdrawn British Standards.

What are withdrawn standards?

To put it simply, ‘withdrawn’ means no longer current which is a new term within BS 7671. This change aligns BS 7671 with other British Standards of which there are, currently, over 33,000.

British Standards are periodically reviewed, typically at a five-year maximum period. When a Standard is revised and updated, the previous edition is withdrawn and considered no longer current.

Withdrawn standards can still be useful, for example, to demonstrate the installation complied with the relevant edition which was current at that time.

For further information on uses of withdrawn standards, see the BSI website

Does an installation complying to withdrawn standards need upgrading?

No, just because the installation was to a previous edition, does not necessarily mean it is unsafe for continued use or requires upgrading. This is reinforced in the text of the introduction and the note by the HSE in the front matter of BS 7671:2018+A2:2022 as shown in Figure 5.

Figure 5: Note by HSE extracted from BS 7671:2018+A2:2022

Note by the Health and Safety Executive

The Health and Safety Executive (HSE) welcomes the publication of BS 7671:2018, Requirements for Electrical Installations, IET Wiring Regulations 18th Edition and its updating with the second amendment, published in 2022. BS 7671 and the IET/IEE Wiring Regulations have been extensively referred to in HSE guidance over the years. Installations which conform to the standards laid down in BS 7671:2018+A2:2022 are regarded by HSE as likely to achieve conformity with the relevant parts of the Electricity at Work Regulations 1989. Installations to which BS 7671 is relevant may have been designed and installed in accordance with an earlier edition, now superseded but then current. That, in itself, would not mean that the installation would fail to comply with the Electricity at Work Regulations, 1989.

How does this affect projects which have already been designed or are on-site?

The expectation is likely to be that the installation is completed and certified to the current edition of BS 7671, regardless of when the design or construction was completed.

The contract should take account of changes to standards and legislation during the contract period and an allowance be made. Given the predictable cycle, six-month implementation period and public consultation process which takes place twelve months before publication, it can't be said to be unexpected.

New smaller projects, such as domestic electrical installations, will be expected to comply with BS 7671 2018+A2:2022 from 27 September 2022 as the contract is unlikely to be of significant length to justify completion to a withdrawn standard.

However, for larger projects there is inevitably a time period between design and installation which can be a challenge.

An electrical installation could be certified to the withdrawn standard subject to contractual requirements and agreement of all interested parties, for example, contractors, clients and insurance companies. However, the implications must be made clear, and it would be diligent to keep a record of the discussions and agreements and include this with the electrical installation certificate. See Note 1 to the introduction to BS 7671:2018+A2:2022, as shown in Figure 4.

Do British Standards have legal force?

British Standards do not have legal force, they are published for voluntary use. However, the note by the Health and Safety Executive (HSE) in BS 7671, as shown in Figure 5, states that *'Installations which conform to the standards laid down in BS 7671:2018+A2:2022 are regarded by HSE as likely to achieve conformity with the relevant parts of the Electricity at Work Regulations 1989 (EAWR).'*
The EAWR is made under the Health and Safety at Work Act 1974 (HSW), which is UK law, and the duties imposed by the EAWR are in addition to those imposed by the HSW Act. The HSW Act applies to all employers, employees and self-employed people. For further guidance on the EAWR, see HSR25 guidance on the Regulations published by the HSE.
In some cases, a law or contract can make reference to a British Standard, using terms such as 'compliance with the requirements of BS 7671', in which case compliance becomes a legal matter. For example, the Electrical, Safety, Quality, Continuity Regulations 2002 (ESQCR) requires compliance with 'British Standard' requirements and BS 7671 is cited for switched alternative sources of energy (Regulation 21) or parallel operation (Regulation 22). However, the British Standard can be said to support the legislation, rather than having legal force in its own right.

Why do standards need updating?

British Standards are reviewed by the technical committee at a maximum of five years. This is essential to take account of technological developments, new methods and materials, and other quality and safety requirements. The standard can either be

‘confirmed’ and remain current or revised. In the case of BS 7671, it is continually being developed and reviewed to take account of new safety requirements and newly published CENELEC harmonised documents (HDs).

There are 42 HDs that form part of BS 7671 listed in the preface to BS 7671:2018+A2:2022. When an HD is published, the UK has three years to adopt the technical intent, hence the requirement to update BS 7671 more frequently than some standards.

Summary

It is important to use the current edition of BS 7671 to ensure the latest requirements are being followed.

For larger projects, completion of an electrical installation to a withdrawn version of BS 7671 is possible, subject to contractual obligations and agreement by all interested parties. See Note 1 to the introduction to BS 7671:2018+A2:2022. However, it is important that the correct information is provided to allow an informed decision to be made and the communications are clear and documented.

British Standards do not have legal force but in some cases, compliance can become a legal matter.

Further reading

BSI – uses of withdrawn standards
BSI – why withdrawn standards can be very useful
IET EngX Wiring and the Regulations forum

Acknowledgments

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