17TH EDITION LAUNCHED

Special Locations includes new requirements for bathrooms

by Geoff Cronshaw

BS 7671:2008 Requirements for Electrical Installations, IEE Wiring Regulations 17th Edition was published in January this year. Installations designed after the 30th June 2008 are to comply with BS 7671:2008.

The 17th Edition includes a new Part 7 (Special Locations), which includes new requirements for bathrooms. All those involved in electrical installation work need to be familiar with these new requirements. Help is at hand, in the form of a new edition of IEE Guidance Note 7 (Special Locations), available soon.

Section 701, Locations containing a bath or shower

Scope

The particular requirements of this section apply to the electrical installations in locations containing a fixed bath (bath tub) or shower and to the surrounding zones as described in the Wiring Regulations. The Regulations do not apply to emergency facilities, e.g. emergency showers used in industrial areas or laboratories. For locations containing a bath or shower for medical treatment, special requirements may be necessary.

What's new?

Changes to the zonal system, RCD protection on all bathroom circuits, 230v socket outlets permitted 3 m horizontally from the boundary of zone 1; supplementary equipotential bonding may be omitted subject to the Regulations being met.

The zonal system

The Regulations state: Horizontal or inclined ceilings, walls with or without windows, doors, floors and fixed partitions may be taken into account where these effectively limit the extent of locations containing a bath or shower as well as their zones. This is similar to current requirements in the 16th Edition except that the actual location containing the bath or shower is mentioned as well as the zones.

The zones are similar to current requirements in the 16th Edition except for the omission of zone 3, also that zone 2 no longer extends above zone 1.

Zone 1 has been extended from 0.6 m in the 16th Edition for showers without a basin for a fixed water outlet to a distance of 1.20 m from the centre point of the water outlet. Demountable shower heads are no longer mentioned.

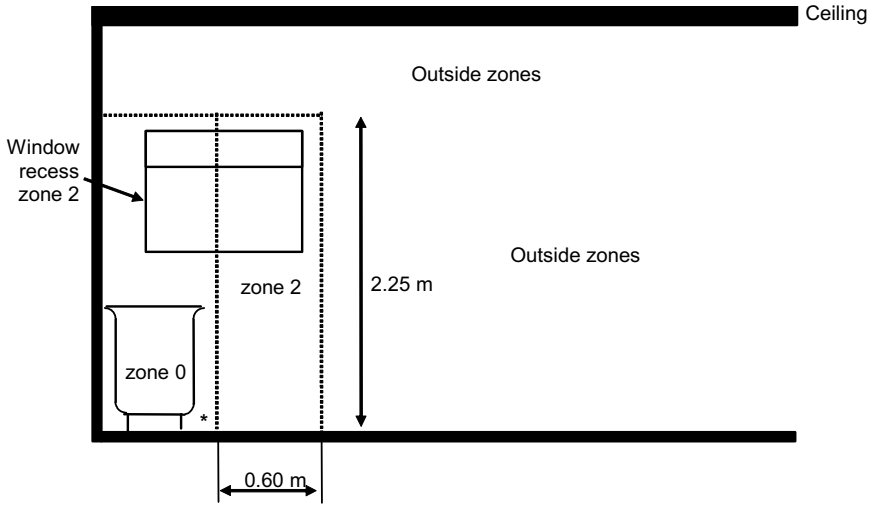

Figure 1: Zone dimensions - elevation view showing a bath tub

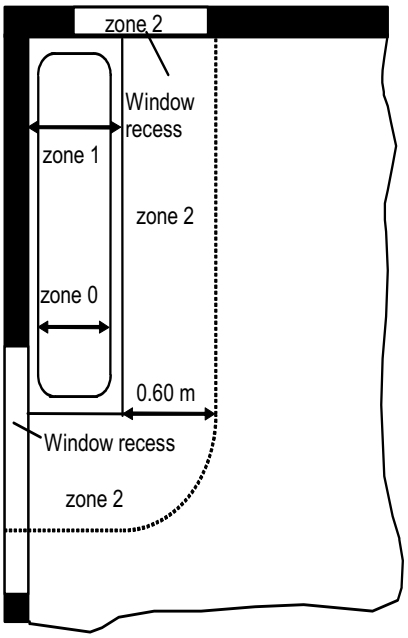

Figure 2: Zone dimensions - plan view showing a bath tub

Zone 1 is now limited by the horizontal plane corresponding to the highest fixed shower head or water outlet or the horizontal plane lying 2.25 m above the finished floor level, whichever is higher.

RCD Protection

Regulation 701.411.3.3 now requires that additional protection shall be provided for all circuits of the location by the use of one or more RCDs having the characteristics specified in Regulation 415.1.1. This is a significant change. Previously (601-09-02), only fixed current using equipment (other than electric showers) located in zone 1 required 30mA RCD protection and current using equipment (other than fixed current using equipment – such as a washing machine, if suitable for use in a bathroom, connected through a fused connection unit) in zone 3 required 30mA RCD protection. Regulation 701.411.3.3 means that all circuits, including lighting, electric showers, heated towel rails, etc., will require RCD protection, not exceeding 30 mA.

230 volt socket-outlets

Another significant change is introduced by Regulation 701.512.3. This now permits 230v socket-outlets

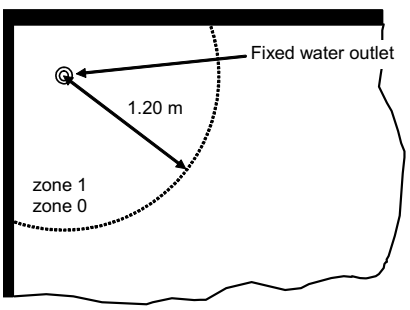

Figure 3: Zone dimensions - plan view showing a shower without a basin

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Michael Faraday House, Six Hills Way, Stevenage, Herts, SG1 2AY, United Kingdom Tel: +44 (0)1438 313311 Fax: +44 (0)1438 313465

Advertising Sales D Smith +44 (0)1438 767224 daniellesmith@theiet.org | **Editor** G D Cronshaw +44 (0)1438 767384 gcronshaw@theiet.org | **Contributing Editors** M Coles, J Elliott, J Ware | **Design** Sable Media Solutions
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to be installed in a room containing a bath or shower providing they are installed 3 m horizontally from the boundary of zone 1. This change resolves the ambiguity that existed between locations containing a bath or shower and a bedroom containing a shower.

Supplementary equipotential bonding

Regulation 701.415.2 introduces a further significant change regarding supplementary equipotential bonding. The Regulation states that where the location containing a bath or shower is in a building with a protective equipotential bonding system in accordance with Regulation 411.3.1.2, supplementary equipotential bonding may be omitted where all of the following conditions are met:
(i) All final circuits of the location comply with the requirements for automatic disconnection according to 411.3.2, and
(ii) All final circuits of the location have additional protection by means of an RCD in accordance 701.411.3.3, and
(iii) All extraneous-conductive-parts of the location are effectively connected to the protective equipotential bonding according to 411.3.1.2.

This means the designer needs to make an assessment that all extraneous-conductive-parts of the location are effectively connected to the protective equipotential bonding according to 411.3.1.2.

NOTE: The effectiveness of the connection of extraneous-conductive-parts in the location to the main earthing terminal may be assessed, where necessary, by the application of Regulation 415.2.2.

Regulation 415.2.2 states: Where doubt exists regarding the effectiveness of supplementary equipotential bonding, it shall be confirmed that the resistance R between simultaneously accessible exposed-conductive-parts and extraneous conductive-parts fulfils the following condition:

$R \leq 50\ V/Ia$ in a.c. systems
$R \leq 120\ V/Ia$ in d.c. systems
where

Ia is the operating current in amperes of the protective device for RCDs, $I\Delta n$, for overcurrent devices, the current causing automatic operation in 5 s.

External influences

The Regulations state:
Electrical equipment exposed to water jets, e.g. for cleaning purposes, shall have a degree of protection of at least IPX5. The Regulations no longer limit the IPX5 requirement to communal baths or communal showers.

There are no particular ingress protection requirements beyond zone 2. This means that BS 1363 accessories, such as switches and fused connection units, can be installed beyond zone 2, subject to the requirements of Regulation 512.2 (external influences).

Current-using equipment

The 16th Edition made a clear division between equipment permitted to be installed in zone 1 and equipment permitted to be installed in zone 2. In the 17th Edition no requirements are stated for zone 2. This is because all circuits of the location now require RCD protection.

The term "current-using equipment other than fixed current-using equipment" no longer appears in the 17th Edition.

Current-using equipment, such as washing machines and tumble dryers for example, continue to be allowed to be installed beyond zone 2, subject to manufacturers' approval similar to the 16th Edition. Such equipment must be supplied by means of a fused connection unit within 3 m horizontally from the boundary of zone 1. Beyond 3 m they may be supplied by means of a plug and socket-outlet.

Shaver supply units

The minimum degree of protection for equipment installed in zones 1 and 2 is IPX4 or IPX5 where water jets are likely to be used for cleaning purposes. An exception to this requirement is a shaver supply unit complying with BS EN 60742 Chapter 2, Section 1, which, although it does not meet the requirements of IP4X, is permitted in zone 2 but must be located where direct spray from showers is unlikely. This type of shaver supply unit, which incorporates a safety isolating transformer, is the only type which is permitted in a bathroom or shower room.

More information.

For more information please refer to the 17th Edition of the Wiring Regulations. Also, help is at hand, in the form of a new edition of IEE Guidance Note 7 (Special Locations) available soon. ■