SUPPLEMENTARY BONDING IN A LOCATION PADDLING POOL

Swimming pools, paddling pools and their surroundings are locations of increased electric shock risk. This is due to the reduction in body resistance and the increased contact between the body and Earth potential due to wet, bare skin

For such locations, the general requirements of BS 7671 are supplemented and modified by the requirements of Section 602 of BS 7671 (Swimming Pools). One of the additional safety measures identified by that section is local supplementary bonding, for additional protection against indirect contact.

Conditions that make local supplementary bonding a requirement

Local supplementary bonding is required if there are any exposed-conductive-parts in zones A, B or C of the location, except exposed-conductive-parts of equipment supplied by a SELV circuit (Regulation 602-03-02 refers). Where there are no exposed-conductive-parts, local supplementary bonding is not required.

The dimensions of zones A, B and C are illustrated in Figures 602A and 602B of BS 7671, which are reproduced below for ease of reference.

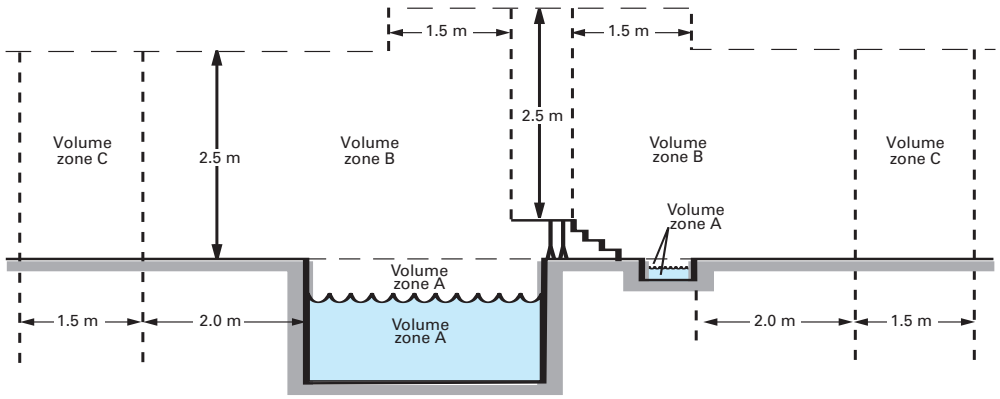


Fig 602A - zone dimensions for swimming pools and paddling pools

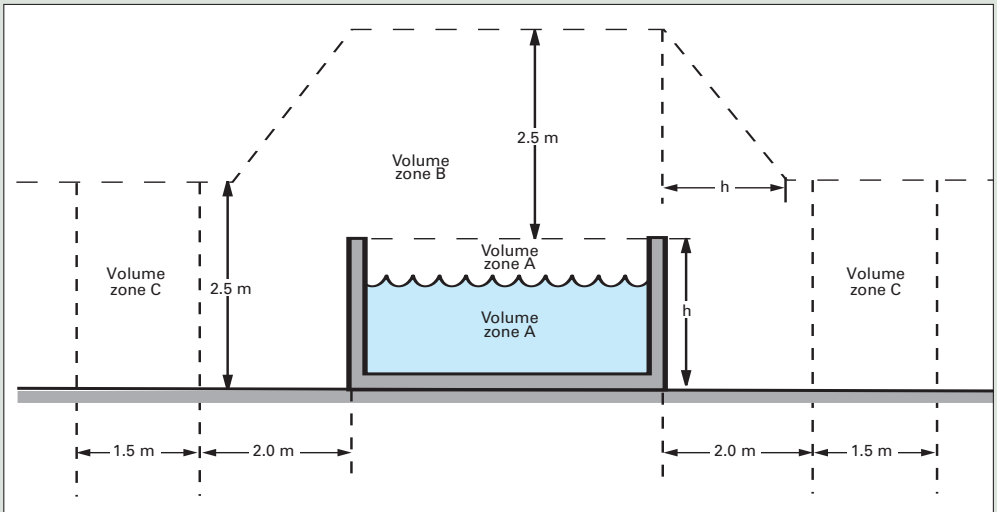


Fig 602B- zone dimensions for basin above ground level

CONTAINING A SWIMMING POOL OR A

Examples of exposed-conductive-parts that may be present in zones A, B or C, and which may make local supplementary bonding a requirement, include metallic enclosures of:

i) socket-outlets in zone B (socket-outlets are permitted in zone B only where it is not possible to install them outside that zone, and where the other conditions stated in Regulation 602-07-01 are met)

ii) Class I switchgear, controlgear or accessories in zone C, where such equipment is permitted in that zone by Regulation 602-07-02

iii) other Class I electrical equipment in zone C (such as surface wiring systems employing metallic conduit, metallic trunking or exposed metallic cable sheaths), where such equipment is permitted in that zone by Regulation Group 602-08.

There should be no exposed-conductive-parts in zones A or B that would make supplementary bonding a requirement, except possibly for exposed-conductive-parts of any socket-outlets permitted in zone B (see (i) above). This is because, except for such socket-outlets, only SELV may be used for protection against electric shock (Regulation 602-04-01 refers), and it is not permitted to install surface-mounted wiring systems employing metallic conduit or metallic trunking or metallic cable sheaths, or accessible metal junction boxes (Regulation Group 602-06 refers).

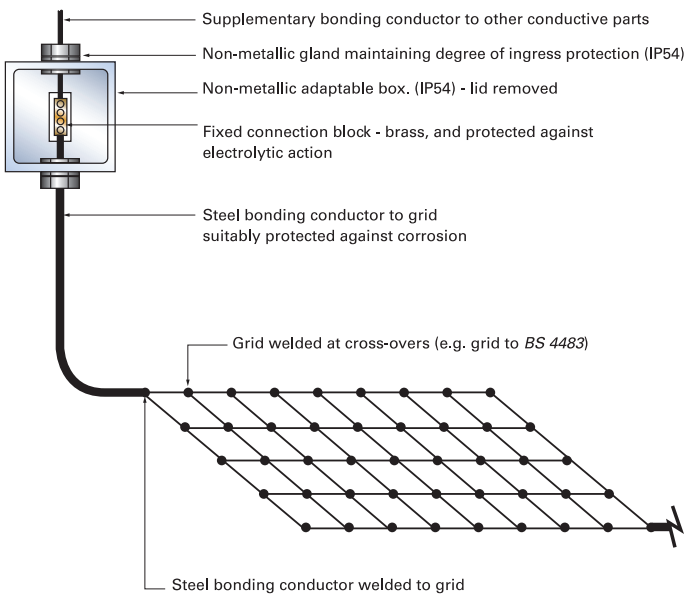
Items to be connected together by local supplementary bonding

Where local supplementary bonding is required, Regulation 602-03-02 requires that it connects together:

- all extraneous-conductive-parts in zones A, B and C (such as exposed metallic pipes or ductwork, exposed structural metalwork, or metallic handrails or ladders, where these would be liable to introduce Earth potential), **and**
- the protective conductors of all exposed-conductive-parts situated in zones A, B and C, except exposed-conductive-parts of equipment supplied by a SELV circuit, **and**
- metal grids (if any) in solid floors.

There is no absolute requirement in BS 7671 to provide a metallic grid in a solid floor, but the need for such a provision should be considered at the design stage, particularly where the floor is not electrically well insulated from Earth potential. Where the electricity distributor is prepared to permit the earthing facility of a PME supply to be used as the means of earthing for the installation, one of the conditions attached to such use may be that any uninsulated solid floors contain a metallic grid connected to the local supplementary bonding.

Two or more bonding connections should be made to the grid, preferably at diagonally opposite corners, and it should be ensured that all parts of the grid are reliably electrically connected together. Good and permanent electrical contact must be provided between adjoining metal grids. This can usually be achieved by binding them together with metal wire for 50 mm at one metre intervals.



Example of metallic grid for supplementary bonding

Bonding conductors

Local supplementary bonding conductors, whether of copper or another metal, must have a cross-sectional area not less than that required by Regulation Group 547-03 of BS 7671. Attention should be paid to the protection of the conductors against mechanical damage and to the avoidance of corrosion, particularly at connections.

Connections should preferably be made accessible for inspection, testing and maintenance. Where not accessible, connections are required to be made by one of the methods listed in Regulation 526-04-01, such as welding, soldering or brazing. (See article on page 43.)